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Excellency LI HUNG CHUAN, Chinese Viceroy. From Mr. Rippon's photograph.

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OF THE

MANCHESTER GEOGRAPHICAL SOCIETY.

ON THE NECESSITY OF THOROUGH TEACHING IN GENERAL GEOGRAPHY AS A PRELIMINARY TO THE TEACHING OF COMMERCIAL GEOGRAPHY.

By H. J. MACKINDER, M.A., Reader in Geography in the University of Oxford.

[Address delivered to the Society in the Memorial Hall, on Wednesday, January 15th, 1890.]

WHEN your secretary did me the honour of asking me to address you here this evening, I felt that I should best meet your wishes by selecting as my subject a topic on which I could speak from experience. I felt further that it must be some topic in which you in this locality would be likely to take an especial interest. "The Teaching of Commercial Geography" seemed to satisfy both these conditions. It is of practical importance to you in Manchester. As for me, it will, perhaps, be well that at the outset I should present to you my credentials, that you may know on what experience my opinions are based, and be able to assess their value accordingly. I know nothing of commerce, except as an onlooker. For a long time I have taken great interest in geography. In the last three or four years it has been my lot to do much geographical teaching and examination. I have had to examine in commercial geography, and to devote some thought to the preparation of myself for that duty. I shall give you, therefore, tentative opinions, not wholly without foundation in experience.

There are two classes in the audience to whom I would specially address myself, the merchants and the teachers. To each of them the subject before us is a practical one. It is for the merchants to state their demands—for the teachers to supply them. The merchants must decide what knowledge and what capacity they expect to find in their children and apprentices. The teachers must consider and experiment how best to convey what the merchants desire. I shall be well satisfied if what I say this evening has the effect of eliciting what cannot fail to be valuable opinions from either body of experts.

I suppose it would be broadly true to say that two generations ago we English were an uneducated nation. There were educated classes among us, but as a nation we were uneducated. Now, I imagine that it would be about equally true to say that we are an educated nation. The last two generations have bequeathed to us a system of instruction whose net has caught the great mass of our people. The present and the next generations have a new problem to face. As we put the finishing touches to the extension of our system, we become uneasily conscious that, after all, education must be very carefully sifted and proportioned if it is not to produce evils nearly as great as those of ignorance. Very few even of professed teachers, with vested interests to defend, claim that our present education is perfect.

What do we expect to find in the educated man? Do we not expect to find him possessed of a double nature—an expert, *i.e.* a specialist, in his money-earning capacity, but the very antithesis of a specialist as a citizen, as a parent, as a member of "general society"? And is not the general complaint that our present education does not give this double nature? Else, what means all this cry, on the one hand, that we lack technical and commercial teaching, and, on the other, that our much-examined youth have lost their initiative and resourcefulness? Intermediate and higher education should be both liberal and technical. Commercial geography may be used to some extent as a means to both.

In olden days men got their technical education as apprentices. The apprentice system lasted until last century, in some callings until this. People are apt to forget how general a system it was. Until nearly the middle of the present century young doctors served apprenticeships. The organisation of most of our present schools of medicine, of most of our medical diplomas, and of the general medical council, has been the work of the last two or three generations. We still have articled clerks in solicitors' offices. But in the case of the handicrafts, the collecting of industry into great factories has gone far to break down the old system—hence the cry for technical education in the narrower sense of the term. In addition, however, to professional education and to handicraft education, a third branch of technical training is called for—commercial education. Commercial men have usually to begin life earlier than professional men. It is therefore essential that a liberal element should be blended with the purely technical side of commercial education.

It has been agreed by all the authorities consulted—the Universities, the Chambers of Commerce, the Society of Arts—that among the subjects requisite to commercial education is commercial geography. But what is commercial geography? I am afraid that, as the result of much recent discussion, people's minds in this country are somewhat clouded as to the real nature not merely of commercial geography but of ordinary geography. A great scientific man has recently written a book on the teaching of geography, in which he tells the teacher to teach as geography the orders of architecture and the homologies of animals! General information is by no means to be despised, but why rechristen it geography, and drive the geographers to seek a new name?

Commercial geography, as my friend, Mr. Keltie, has put it, is simply one of the applications of geography. It is applied geography—applied to the explanation of the phenomena of commerce—applied to the help of commerce. Application involves two things—a thing applied and a thing to which applied. In the present case geography is applied to commerce, and therefore it seems only rational to ask that, before any application whatever is made, something shall be known of geography and something of commerce. In the matter of commerce the boy must at least have some idea of the common process of trade—the growth or mining of the raw material, the sale of the raw material, the transport of the raw material, its sale again, its manufacture, the sale of the manufactured article, its transport, and finally its retail sale to the consumer. It requires considerable familiarity with the ways of trade to see readily why one route or one market is better than another, and by the time this familiarity can have been acquired the elements of geographymust have been learnt, or they will never be thoroughly learnt. Moreover, it is a cardinal principle of teaching to teach one thing at once—first the geography, then the ways of commerce, and finally the application of the one to the other.

What, then, is the nature of the geography which must be taught as the basis of commercial geography? I am afraid that many people still fancy that to know something of geography is to be able to say where is Little Sandcombe-upon-Sea. This implies the idea that geography consists of so much useful or useless information. Such a geography would have done for the days before printing, but is commonly and rightly despised in an age of atlases and gazetteers. There is, however, another conception of geography—that it consists in the main of trained capacity, and only incidentally of information. My meaning will be best conveyed by an example. It shall be a commercial example. Suppose that I am told that a certain sample of wheat comes from Lahore, and that I do not know where Lahore is. I look it out in the gazetteer and ascertain that it is the capital of the Punjab, one of the eight provinces of India. If I know nothing of geography, I shall get up with the idea that Lahore is in India, and that will be about all. If I have been properly trained in geography, the word Punjab will, to borrow a term from logic, probably *connote* to me many things. I shall see Lahore in the northern angle of India. I shall picture it in a great plain, at the foot of a snowy range, in the midst of the rivers of the Indus system. I shall think of the monsoons and the desert, of the water brought from the mountains by the irrigation canals. I shall know the climate, the seedtime, and the harvest. Kurrachee and the Suez Canal will shine out from my mental map. I shall be able to calculate at what time of year the cargoes will be delivered in England. Moreover, the Punjab will be to me the equal in size and population of a great European country, a Spain or an Italy, and I shall appreciate the market which it offers for English exports. This is geographical capacity — the mind which flits easily over the globe, which thinks in terms of the map, which quickly clothes the map with meaning, which correctly and intuitively places the commercial, historical, or political drama on its stage.

One of the chief reasons why the information-theory of geography has come to be so generally prevalent is the encouragement which it receives in examinations. Information is more easily assessed by marks than is capacity, and, therefore, information is very usually asked for in examinations which involve either competition or payment by results. We are suffering just now under a reaction from nepotism and purchase, but if selection by examination is to hold its own it will have to be greatly modified.

In this connection it will be well to draw a distinction between the commercial geography of the library and records of such a society as yours, and the commercial geography which a teacher should give to his pupils. *You* rightly aim at amassing and indexing a vast store of facts. The teacher should try to produce men capable of using that store with readiness and mastery.

Capacity with a trained geographical bias being our aim, how are we to produce it? The doctrine now proclaimed on all sides is that you must begin with the home. You must start with what the Germans call *Heimatskunde.* You must teach the streets, the roads, and the map of the immediate neighbourhood of the school. This is the true inductive principle, which undoubtedly required emphasising, but which can be pushed too far. Most subjects have to be begun dogmatically. Logical development comes at a later stage. The alphabet, the multiplication table, and, as I urge, the great outlines of land and water, must be taught young, and taught dogmatically. Our object at this stage is less to train the reasoning powers than to imprint on the yet plastic mind certain fundamental forms and relations which are to become its second nature. The root of all geographical ability lies in being at home with maps. Most people in this country require the aid of the name in the corner before they recognise the outline shown. There are comparatively few who turn to the map as they would to the photograph of an old friend's face. If an errand boy were wanted in a Manchester office, would it not be expected of applicants for the post that they should know the business parts of the town familiarly? There is a great difference between the acquaintance of Manchester got by a stranger, Baedeker in hand, and that intimate knowledge which would enable a smart errand boy to carry a telegram by the shortest cuts, without a moment's calculation. There is the same difference, in a yet more marked degree, between knowing your notes and being able to touch them unconsciously on the piano in the execution of an opera.

A chief cause of awkwardness with maps is to be found in the one little atlas which was the companion of most of us for several years of our youth. France, as we think of it now, is the France of that atlas; Italy is the Italy of that atlas. We divide the world into parts as it happened to be divided there. The relative sizes of lands were determined for us once and for all by that particular collection of maps. In a word, we are wooden and rigid in our geographical vision, and no amount of subsequent correction quite atones for the original sin. Witness the difficulty many people have in following a lecturer who has occasion rapidly to range over the length and breadth of the world. The majority of his audience are out of breath as he hops out of one familiar compartment into another.

This tendency to crystallisation must be constantly guarded against. Why not draw Italy to-day, Italy with France and Germany to-morrow, Italy with Turkey the day after, &c., &c.? Thus the form would become familiar, but with different settings. Or why not draw England and India, on the same scale to-day, and Russia and India on the same scale to-morrow? So, too, with the text-book—why the chapter on France to-day, that on Germany to-morrow, and so on in sequence of countries? Why not constant comparison—the mountains of France *and* Germany to-day, the rivers of France *and* Germany to-morrow? The text-book should be a servant, not a master. The teacher should teach as he would teach geometry, with a succession of problems and riders.

If any large proportion of the community were thus trained, our books and newspapers would begin to save many quires of print by recourse to sketch-maps and diagrams, as they have already taken to pictorial illustrations. Thinking in terms of the map is an extra mode of expression, almost an additional plane of thought.

With such a preparation as this, commercial geography would be a fruitful subject. It would contribute both to the technical and liberal education of the commercial youth. As practical problems he would have to weigh the relative advantages of alternative routes, to plan round voyages so that the ship should be most rarely empty, to balance the rival advantages of different lands for the growth of the same commodity, and so forth. Theoretically, he would learn the past geography of commerce; he would see in Tunis and Sicily the granaries of Rome, and would picture the overland trade from the East by Constantinople or Venice. He would so learn that the present order is not eternal, and would be keenly on the alert for change in the future. His geography would become suggestive in his commerce.

In the main, then, geography and its supplement, commercial geography, should be so taught as for ever to impress the mind of the learner with a certain number of great landmarks on the globe, and to give him the capacity and habit of so using those landmarks as to carry his mind with ease to any spot in the world, and to picture its characteristics and relations. And this, I contend, can never be done unless geography be first well taught apart from the commercial complication.

Teachers of commercial geography must keep in mind the fact that technical education is not aimed at making walking encyclopædias, but at turning out men who shall be supremely makers, doers; and commercial geography will be judged in the long run by the part it takes in making merchants who shall be ready, accurate, and imaginative.

Prince Henry of Orleans' Journey through Central Asia.—Some further details respecting the expedition of M. Bonvalot and Prince Henry of Orleans, to which we briefly referred to in our last number, have been received by the Geographical Society of Paris. The party, which includes a Belgian missionary, M. de Decken, who acts as interpreter, left Kulja about the middle of September last, and arrived at Korla, near Lake Baghrash, after a journey of 22 days across the Tian Shan. The route followed was first of all to Mazar, and then along the valley of the river Kash. The first mountain pass led them into the valley of the Kungez, a second pass into that of the Tsakma, a third into that of Yuldus, and a fourth into that of the Khaidu-gol or river of Karashahar, which is described as a gorge. Great variations of temperature were experienced during this short journey; 104° (Fahr.) in the shade in the valley of the Kungez, and zero (Fahr.) in the Yuldus valley. The greatest altitude reached was at the pass of Narat, which is about 11,500 feet high. Forty specimens of birds and mammifers were collected. The travellers were *en route* for Lob Nor.—*Proceedings of the Royal Geographical Society.*

Pievtsoff's Expedition in Central Asia.—Since our last issue further news of the progress of this expedition has been received. From its winter quarters at Nia, Lieut. Roborovsky had discovered a practicable route across the mountain range into north-western Tibet. The country beyond was found to be a tableland, 12,000 feet above sea level, desolate and uninhabited. The expedition will move forward at the beginning of April, and pass the summer on the plateau, descending thence in Sept. and travelling *viâ* the Cherchen river to Lob Nor.—*Proceedings of the Royal Geographical Society.*

ROSSEL ISLAND. (A CANNIBAL ISLAND.)

By Mr. BASIL THOMSON.

[Read to the Members by the Secretary at a Meeting in the Library, January 24th, 1890.]

WHEN the flag which had been so often hoisted over New Guinea was finally run up in August last year, and sovereignty proclaimed over the strip of country left to us by Holland and Germany, the scattered archipelago which stretches 150 miles to the eastward of the island continent was included in the "Possession" of British New Guinea. Visited only by schooners recruiting labourers for the Queensland labour trades, among which was the notorious Hopeful, the few natives who have seen a European both distrust and fear him. The occasional murders of isolated pearl and *bêche de mer* fishers have given the natives of these islands so evil a reputation among the white residents in New Guinea, that no professional collector of natural history has ventured among them, so that ornithology is nearly, and entomology quite, a new field to the naturalist, while botany has been left untouched. And just then a special interest attached to the geology of these islands, owing to the discovery of gold in the island of Sudest, in a formation of schistone slate, which is common to the neighbouring islands Exaggerated accounts of this gold find reached Cooktown (Queensland), and hundreds of miners from the Cook district took their passage in whatever craft they could find for the new gold-field. Sovereignty had been proclaimed, but as yet there were no police nor machinery of justice. The genuine miners, who are an orderly community, were certain to be followed by the scum who haunt the gold-fields, to prey upon the diggers—"spielers," card sharpers, adulterated grog-sellers, and men who are "wanted" by the police. It was obvious that something must be done to maintain order among the whites, and prevent collisions between them and the natives. The necessity for visiting Sudest, which, except Rossel, is the most easterly of the Louisiade group, afforded an opportunity for exploring the least known of the islands. Accordingly, after disposing of the official business at Sudest, we reached Rossel on October 9th. Special interest is attached to this island. The dangerous reef, known as Rossel Spit, which runs far out to the south-east, has been the destruction of more than one vessel, and the reported ferocity of its inhabitants, so different from their neighbours of Sudest, has enveloped the whole island with an air of mystery. The following is an extract from the Admiralty Sailing Directions:—

"On the 30th September, 1858, the ship St. Paul, bound from Hong Kong to Sydney, with 327 Chinese passengers on board, was totally wrecked on this island, when all hands reached the shore. The captain and eight of the crew then left in a boat to obtain assistance, and on the French steamer Styx arriving at the spot from New Caledonia, early in January, 1859, it was found that the whole of the passengers and the remainder of the crew, with the exception of one Chinese, had been horribly massacred by the natives. The survivor stated that the natives feasted upon the bodies of their victims."

To eat 326 Chinamen would require a large population, for even Chinamen will fight to defend their lives; and it was therefore with some surprise that we saw before us a towering wall of tropical forest as guiltless of clearings as if man had never set foot on the island. As we steamed up to a small off-lying island (High Island) a few canoes put off to the Hygeia, which we had in tow. They were manned by natives of small stature and uncouth appearance, who differed from their neighbours of Sudest in having none of the Papuan characteristics. They seemed far more like natives of the new Hebrides. For clothing, the men wore a perennial band, consisting of a large pandanus leaf, secured by a cord of human hair, wound several times round the waist. Neither here nor on the main island did we see any of their women, but as we found a number of grass petticoats in the houses we may suppose that they wear the dress common to all New Guinea women. Every second man suffered from *tinea desquamans* (Jokalan ringworm), an unsightly and loathsome skin disease, which is supposed to have come from the Line Islands, and to be steadily travelling westwards. It appears in patches of a dirty-white colour, from which the skin continually peels off, but though the person suffers some inconvenience the disease does not incapacitate him in any way. We found on shore one boy who had been on a Qeensland plantation, and who spoke "pidgin" English. We could not persuade him to accompany us to the interior of the main island, which he said was inhabited by enemies, who would kill and eat him after we were gone. Next day we steamed into Dixon Bay, a deep indentation which reaches to the foot of Mount Rossel. As the bay was unsurveyed, and probably full of coral patches, we anchored on the south side, opposite a small village, and there the gunboat left us to shift for ourselves. The interpreter, brought from High Island, at once deserted, and we could only learn from our new friends that if we crossed the mountains we should all be cooked and eaten. At the bottom of the bay was a wall of mountains, forest-clad to their summits, and crowned by Mount Rossel, about 3,500 feet high. Unable to persuade the friendly natives to accompany us, and finding all the other villages in the bay deserted, we divided our baggage and provisions into seven packages, weighing about 30lb. each, and started, each man being armed with either a Winchester rifle or shot gun and revolvers. Soaked with heavy rain, and trying to steer by compass through the labyrinth of wild boar tracks, which formed a net work through the gloomy forest, we spent our first two days in great discomfort. Often we had to cut our way through a barrier of thorny creepers with the cavalry sabres with which two of our party were provided. We halted at last in a small deserted native village, not far from the sea, to dry our baggage, which had suffered much from the rain. The day was devoted to collecting. Considering the damp climate, and the richness and variety of the vegetation, Rossel Island is by no means rich in beetles and butterflies; nor is there much variety in the birds. Among the beetles were two new species, one being probably the largest burrowing beetle in the world. We obtained only two new species of birds, and two snakes, both new. But the botanical specimens amply compensated for the poverty in animal life, and we regretted deeply that we were not better provided with appliances for drying and preserving plants. Much of our collection was useless for purposes of comparison on its arrival in Melbourne.

At length, on October 14th, we began our ascent of Mount Rossel, and after travelling for some miles along a ridge running in an easterly direction, we branched off and descended the other side of the range. The native track soon became a wide and well kept road through the forest. Expecting every moment to see a large town, we were not a little disappointed to find ourselves in a small fortified village, so recently deserted that the fires were still burning in the cooking places. The only plausible explanation of the road is that the forest into which the natives are compelled to penetrate in search of food is haunted by spirits who can only be exorcised by light and air. Nowhere else in the island, nor in the mainland of New Guinea, did we find a similar road. The valley in which we now found ourselves was sparsely timbered and highly cultivated. A rapid stream flowed past the village in a S.E. direction. But beyond the dismal and weird howls of a few tame dingoes our shouts brought no response. Our hosts had fled, and so we could not ask for hospitality. We took it, and passed an uneventful night in their village. The houses were of the usual Rossel pattern—an inverted boat on a platform five feet from the ground. There were no doors at the ends, but the house was entered through a trap door in the floor. The floors were littered with baskets filled with food and the ordinary utensils of New Guinea; the eaves were filled with bundles of spears, so placed that they could be easily seized from either inside or outside the house. But even in this remote corner of the world, never willingly visited by a ship, the age of stone was passing away—the age of iron was come. A dozen adzes, made of iron bolts or chain plates, told the story of the German brig, wrecked on Rossel Spit a few months ago, and showed that these inland people have trade communications with the natives of the Eastern coast. Among the rest were a few pieces of very old iron, almost eaten through with rust, doubtless relics of the ill-fated St. Paul. There were three or four skulls and a few human bones lying as if neglected on piles of stones and rubbish. The party sent out at daylight to shoot pigeons reported that they had found another village in the neighbourhood, so before continuing our journey we went to see it. On the way we came suddenly on half-a-dozen natives carrying cocoanuts. They dropped their burdens and fled into the bush, in spite of our shouts of "Gemba" (peace). The cocoanuts were perhaps intended as a peace offering for us, and would have been presented to us outside the village we slept in. In the new village we found a pile of human bones and skulls so placed as to leave little doubt that they were the bones of enemies who had been cooked and eaten. The houses were well built, and one of a different pattern was ornamented with squares and diagonals of red and black paint. In one house was the rude model of a European ship. The day was spent in forcing our way through mangrove and sago swamps, climbing steep hills, and passing small villages, apparently deserted at our approach. At length, after following a ridge leading S.E., a glorious view burst upon us. The south coast of the island lay like a map at our feet. Far to the S.E. stretched the dangerous reef known as Rossel Spit, while nearer to us a silver line of foam showed the barrier reef broken by three different openings leading to small harbours. The S.E. coast of an island in the South Pacific is usually the most populous, and we were therefore not a little surprised to see no more than three small clumps of cocoanuts marking the sites of small villages. Cocoanuts are a sure indication of a village, and, except in quite new settlements, there are no villages without them. Being pressed for time we could not explore the N.E. coast, but from the height of the mountain spurs, and the narrow space between their summits and the sea, we judged that there would be little or no flat land capable of cultivation. Our return journey over Mount Rossel to the schooner was uneventful, but a few days spent at the anchorage enabled us to open relations with the natives of Dixon's Day, one of whom spoke "pidgin" English. From them we learned that the people eastward made periodical descents upon their villages, killing and eating those whom they took unawares. The population of the island offers a difficult problem. The mountains and woods are a network of native paths, such as in Fiji are not found, even in the most thickly populated districts; and even allowing that the dense foliage would prevent the rapid appearance of undergrowth, the inhabitants of Rossel must either be very numerous or much given to wild pig hunting. If the accounts of the wreck of the St. Paul are to be believed, the population must have been very numerous thirty years ago, for 300 Chinamen would hardly allow themselves to be killed and eaten by a handful of natives. On the other hand, the villages and plantations on three-fourths of the island seen by us would not maintain a population of more than 1,500 or 2,000 souls. It is probable that since 1858 the island has been visited by an epidemic, which has reduced the population by one half, the more so since we passed through a deserted village. This is not without precedent. In 1875 the population of Fiji was reduced from 140,000 to 100,000 by an epidemic of measles. A few years suffice in these latitudes to efface all traces of a native settlement. Indeed, the only durable ruin left of a deserted village are oyster shells and pieces of broken pottery.

The language spoken by the Rossel islanders differs very much from that in use among the other natives of the Louisiade Archipelago. The island itself is separated from its fellows by a strait of deep sea, which contracts the great ocean rollers into a most dangerous passage for canoes.

It was found that a colony of Tongans who had been carried southwards in a gale to the island of Pylstart, had in a very few years changed not only the words they used but even the pronunciation of the words they had retained, and it would therefore not be wonderful if a tribe who had not yet even attained to the substitute for written literature—national songs—should have so modified their original tongue that it no longer betrays its origin.

The language is spoken with a curious half querulous intonation, which is quite peculiar. It is full of the ellipted consonant sound which in Eastern Polynesian is expressed in writing thus: "Ji'i," "Uma'a," &c. It is not improbable that when the vocabularies are compared, the dialect of Rossel may be found to be allied to those of the New Hebrides.

And so the mysterious island was explored, and as in all mysteries the *dénouement* was a little disappointing. But although no fierce and warlike tribe of cannibals inhabit its gloomy interior, yet the silence and solitude of its sombre forests, relieved only by the profusion of flowering orchids or the flash of some bright plumaged bird, leave an impression on the mind that is not easily forgotten.

"UNKNOWN FRANCE."

THE HYDROLOGY OF THE CAUSSES OF LANGUEDOC—THE GORGES OF THE TARN, ITS CAVERNS AND SUBTERRANEAN STREAMS, BEING A CHAPTER ON DENUDATION AND THE RÉGIME OF UNDERGROUND WATERS. *(See map.)*

By Mr. MARK STIRRUP, F.G.S.

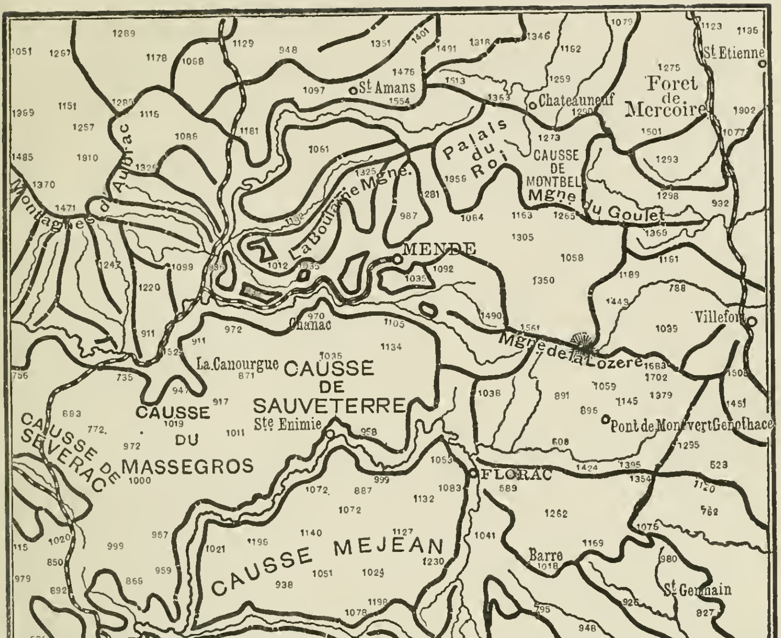
[Addressed to the Members at the Memorial Hall, February 12, 1890.]

THE corner of the world to which I have been asked to draw your attention to-night is one full of interest not only to the geographer, the geologist, and the lover of nature, but also to those who are in search of mere novelty and adventure.

This "pays des Causses" is situated in Southern France, in the northern portion of the ancient province of Languedoc, and is now included, for the most part, in the modern departments of La Lozère and L'Aveyron. The little notice this district has received at the hands of travellers and geographers may be due to various causes, the principal of which is probably its previous inaccessibility and comparative isolation in the heart of the Cevennes Mountains, in a region reported to be the poorest in all France, both as regards agriculture and commerce. This neglect, it is to be hoped, will now be remedied by recent railway extensions, which give ready access to the country.

The attention of the public has only recently been drawn to this region by the appearance of articles in certain French geographical and scientific journals, describing the attractive features and great natural curiosities which are here to be met with. The explorers to whom I am mostly indebted, for the facts and statements which I shall have to put before you, are M. Malafosse, of Toulouse, and M. Martel, of the French Alpine Club, to the latter of whom I am indebted in various ways for his kindness in furnishing me with information, and his assistance and judgment in selecting the views that will be shown in the lantern, some of which embody his own explorations, so recently as the summer of last year, and which have not hitherto been put before the public, except by Mr. Martel himself.

Before proceeding to consider the claim to your attention of the special district of the Causses of Languedoc, I wish to draw your attention to one or two of the physical causes which have determined the present surface features of the earth, of which the region I shall have to describe is a grand illustration.



E.A. MARTEL

TYPO ETCHING CO, SC.

The small figures represent the height above the sea level in metres.

MAP TO ILLUSTRATE ADDRESS OF MR. M. STIRRUP, F.G.S.

Copied from Mr. Martel's Map for *The Journal of the Manchester Geographical Society.*

Geography, understood in its widest sense, comprehends many departments of knowledge, but my remarks will, for the most part, only extend to that branch which has for its object the study of the physical features of a country and how they have been produced.

The physical outlines of the earth's surface are ever changing. What they are now, they have not always been. Level tracts are upraised and mountain lands brought low, and though some of these alterations are inappreciable during the short span of a man's lifetime, yet they are nevertheless constantly going on and readily recognisable to the educated eye.

These changes are due to the play of natural forces, some of which are ever building up or constructing, whilst others are wasting away or destroying. It is to these latter agents that your attention will be directed this evening. Water, in the shape of rain and rivers, is one of the most important factors in the work of denudation and destruction, often in combination with other meteoric forces—sun, wind, frost, ice, and snow. The power of water to erode the solid rocks depends largely on its rate and volume, modified by the mineral constitution and geological structure of the ground over which it flows. Some rocks offer great resistance to the permeation of water through them, such as clays, granites, and certain schists, while others are readily penetrated, as in the case of sands, gravels, and limestones. Limestone and dolomitic rocks (the latter of which are a compound of calcium and magnesium) are peculiarly liable to the ravaging effects of running water, as the stream has then not only an erosive power, due to its mechanical action, but it has a chemical one superadded.

Rain water is charged more or less with carbonic acid, and coming into contact with the limestone, dissolves it molecule by molecule, and carries it away in solution.

The application of these general remarks to the particular district under consideration will be manifest when you see, in the views projected on the screen, the extraordinary results of this combined mechanical and chemical work of water, not only on the surface of the ground, but also in those subterranean and invisible regions which are so difficult of access to man. This destructive work, in the present instance, is due in large measure to the mineral composition of the rocks, which are built up of those materials most readily acted upon by denuding agencies, viz., limestones and dolomites.

The name *Causses* applied to this region and its signification may probably be unknown to most of you. Its derivation is evidently from the Latin *calx* (limestone or lime), through the intermediary of a *patois* name, *caous.* It is a local name, applied to certain large calcareous plateaus, high tablelands ranging from 2,600 feet to nearly 4,000 feet above sea level, which extend into the departments of the Lot, Lozère, Aveyron, Gard, and the Hérault. They divide the schists of the southern Cevennes into two portions, the basin of the Lot being on the north, while they are cut off on the east by the granites and schists of Mount Lozère (5,580ft.) and Mount Aigoual (5,138ft.)

The special features of the Causses are their deep gorges, their plateaus cracked with innumerable fissures, traversed by numerous vertical *avens* or swallow holes, and rocks of marvellous shapes cut out of their cliffs, while their interior recesses have been excavated into caverns and tunnels by subterranean streams, making it a region unique in France. These characteristics are partly due to the elevation and position of the Causses with regard to the neighbouring higher lands, and more especially to the mineral composition of the rocks which go to build up their mass.

Without entering into geological details it may be said that the rocks of the Causses belong essentially to the Jurassic formation, and consist principally of limestones, dolomites, and marls, resting upon the lias. The dolomite is one of the most characteristic rocks of the region, and, as previously remarked, it lends itself readily to disintegration and erosion, as will be seen in the vertical escarpments and curiously-eroded rocks pictured in the photographic views to be submitted to you.

"The Causses," says the geographer Reclus, "are unique in France, by their configuration, their aspect, and their climate." As to the two former characters, you will be able to gain some idea from the photographs, and as to the climate, on the surface of the Causses it is extreme; rigorous, and severe in winter, often impassable from the depth of snow; while in the summer it is baked with a burning heat. In the valleys, however, several hundred feet below, a warm and Mediterranean climate prevails, permitting the growth of almond trees, vines, and the olive. These tablelands have been divested of their wood, and are now, in fact, deserts, naked, dry, without water or wood, except on the edges and flanks of the Causses, among the inaccessible rocks, where remnants of their ancient forests of beech and oak still maintain a foothold.

Of the numerous special features of this region, one of the most wonderful and picturesque is the river gorges, narrow ravines or cañons, which separate the several Causses from one another. The walls of these gorges are, for the most part, vertical, rising from about 650ft. to, in some cases, nearly 2,000ft. above the stream, which flows between them. The cliffs have not been rent asunder by any great earth movement, as you might at first suppose, but the severance is due to erosion by running water in a manner which will be illustrated hereafter.

The three principal streams which divide the Causses are the Tarn, the Jonte, and the Dourbie. The gorge of the Tarn is the most beautiful and perhaps the most characteristic, as, for a distance of about 50 miles from Florac to Millau, the river runs in a narrow, deep, and sinuous crack, between perpendicular walls, which in some places rise to 1,300ft. and 1,600ft., and even upwards of 1,900ft., above the river itself.

Another singular particularity of the Causses is its hydrography, or the conduct of its waters. Its rivers have no affluents open to the light of day—that is, with open-air channels. The streams are recruited and supplied from subterranean sources, by means of powerful springs, which issue out of dark caverns or narrow fissures in the sides of the cliffs or well up from the bed of the rivers themselves. These springs are outlets of often unknown subterranean currents.

MM. Martel and Gaupillet have succeeded in reaching two of these currents—the one under C. Larzac, at the bottom of the abyss Mas Raynal, near Cornus, 106m. (350ft.), the other under C. Gramat, at the bottom of the Puits de Padirac (Lot) 108m. (350ft.), the latter of which has been followed in a boat over 2 kiloms. through splendid grottoes, eight lakes, and 33 cascades or rapids, without the explorers being able to see the end—probably it is a feeder of the Dordogne. The conclusion drawn from these discoveries is that the rains penetrate the calcareous plateaus by percolation, and are accumulated under the form of subterranean rivers (and not in large sheets) in the fissures of the ground, which are widened by erosion, and that the interior of the Causses is much less cavernous—much less hollow—than was thought.

The first of the series of pictures that will be shown to you introduces us to the river Tarn, at a point soon after it becomes navigable, a little south of St. Enimie, at St. Chély. The river varies in depth according to places and seasons, sometimes widening out into lake-like expanses, then narrowing again until the river fills up the whole width of the gorge. Between St. Enimie and Peyreleau several rapids are traversed among the great rocks which in places are strewn along its bed.

One thing which these pictures will fail to show, is the wonderful colouring of the white dolomite cliffs when lighted up by the rays of the setting sun, spotted and dashed as they are with shades of the brightest of red, yellow, and orange, due to the salts of iron with which the dolomite is impregnated.

Although these views have an attraction from a picturesque point of view, yet it is as illustrations of the power of running water in altering the surface outlines of our earth that I would prefer you to regard them.

[A series of views was then thrown on to the screen, illustrating in a clear and charming manner the characteristic features of the Causses. Some of the most picturesque portions of the Gorge of the Tarn were shown, with its vertical walls of rock, penetrated in places by numerous caverns. The views of that marvel of the Causses, Montpellier-le-Vieux, or the city of rocks, were intensely interesting, showing the curious shapes its cliffs have assumed under the eroding influence of water, simulating, in some instances, the forms of natural objects, but of gigantic size, while from some points of view these weathered rocks bear the semblance of titanic ruins of some ancient city. The subterranean action of water was also exemplified by several views of the Grotto of Dargilau, the walls of whose numerous chambers are adorned by the most picturesque crystallisations, the formation of which was explained. Other wonders of the Causses were shown in views of some of the principal *avens* or swallow-holes; also the underground course of the river Bramabiau was traced, showing a gorge in the process of formation.]

To sum up, in a few words: The lesson taught to us by the series of landscapes and the views of the subterranean recesses of the Causses vividly demonstrate the results of denudation and the extraordinary power of running water in sculpturing the solid rocks and changing the aspect of the earth's surface.

The different plateaux which we now see separated by those deep gorges were once a continuous land, over which the water swept in channels, now obliterated or entirely eroded away.

Where are now the streams which carved out those long corridors and magnificent caverns which you have seen projected on the screen? The *present* puny streams, their modern representatives, seem quite incapable of the task.

We are driven to admit that at some anterior geological epoch streams of greater volume and intenser action once filled these dry grottos and galleries, probably due to a more excessive atmospheric precipitation or some change in climate.

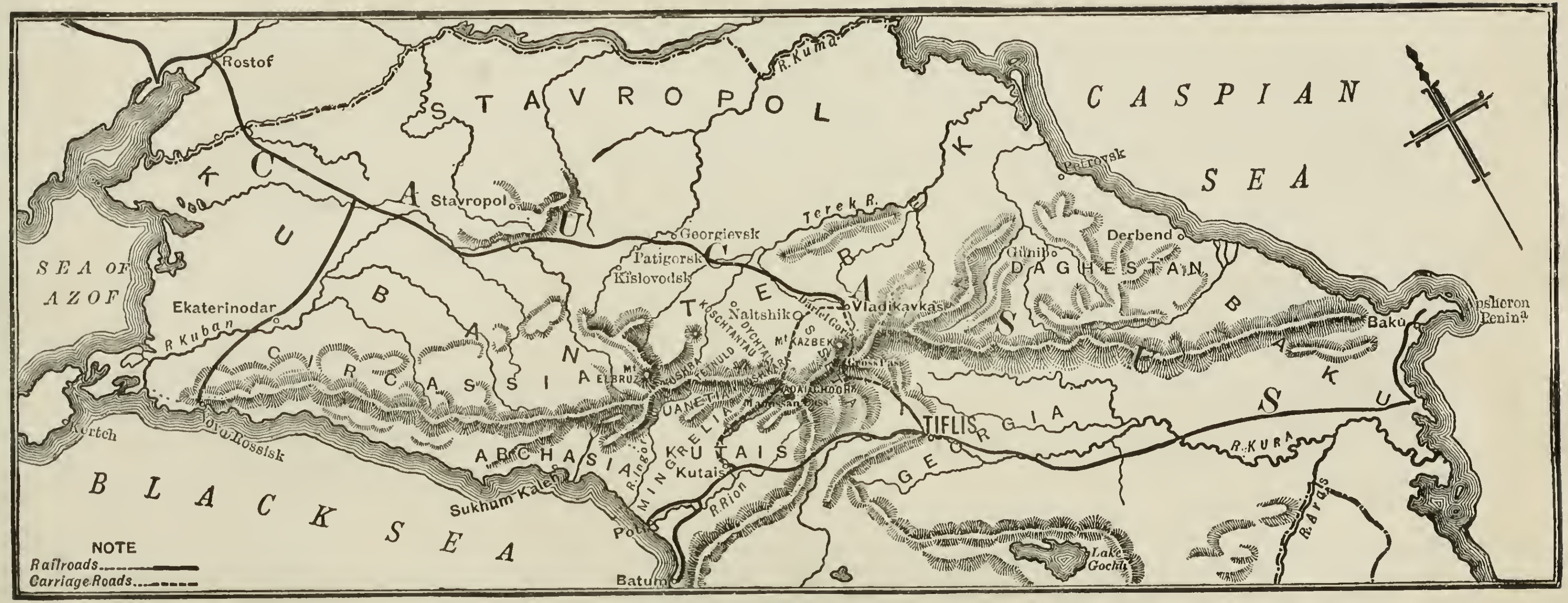
There are signs on the flanks of Mount Lozère and Mount Aigoual that glaciers once rested there. If so, the floods resulting from their periodical melting would, in their natural course, owing to the inclination of the ground to the southwards, flow over these calcareous tablelands.

These wonderful monoliths, standing on the edges of the Causses, cut into such fantastic shapes, while striking examples of the corrosive power of water, doubtless owe much to the composition and character of the rock itself.

The upper dolomite has friable sandy veins running through it, is but slightly homogeneous, and is very unequal in compactness, and thus the eroding power of water is aided by the instability of the rock itself.

Time and your patience will not, I fear, permit me to enter into many other questions which a study of this curious region offers to us, but I hope I have said enough to arouse your curiosity and interest in the district I have endeavoured to delineate.

I have said nothing of its bone caverns or prehistoric treasures, nor have I attempted to compare its phenomena with similar ones in our own country, in Europe and the United States, as each district has its own speciality and *facies*, which it is ungracious and useless to put into terms of comparison.



SKETCH MAP OF THE CAUCASIAN RANGE.

THE FORESTS OF ABKHASIA.

By DOUGLAS W. FRESHFIELD, Hon. Sec. R.G.S.

(See Map and Illustrations.)*

[Addressed to the Members at the Memorial Hall, Wednesday, March 5th, 1890.]

I HAVE recently described the mountain ranges and valleys of the Central Caucasus at some length in the pages of the Proceedings of the Royal Geographical Society (see volumes for 1888-90), and to these I must refer those of my readers who may desire a groundwork for the following notes of a journey from the mountain district of Suanetia, lying at the source of the Ingur, to the Black Sea at Sukhum Kaleh.

Baksan Tartars at Urusbi.

Last summer (1889) I spent, with my companion Captain Powell, a week as the guest of Prince Atar Dadish-Kilian, the head of the native family who once ruled over the lower part of Suanetia, and are still its greatest proprietors.

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* The Map and Illustrations to this Paper are used by the kind permission of the proprietors of the *Graphic.* (See "The Peaks and Glaciers of the Caucasus," by Douglas W. Freshfield, F.R.G.S., in *Graphic* of August 24th, 1889.)

Ezeri—the Prince's residence—consists of a number of detached towered hamlets, spread over a tract of broad sunny meadow-land some 6,000 feet above the sea, and a few miles west of Betcho, the centre of Russian rule. Beyond the Ingur rise the snows and forests of the Leila, in one of the glens of which the Prince has his horses at pasture. To the N.E. Ushba shows its enormous twin tusks over the green hill-shoulders, and down the valley there is a view of the hills and valleys of Lower Suanetia, closed by the fine peak hitherto called Dotur.

Here we lay in luxury on Turkish divans and fared sumptuously all one Sunday, while the villagers feasted feudal-fashion on the green, and Suanetian damsels sang the old ballads of the country and danced strange dances, till midnight brought a heavy supper on to the long table in the hall, where we sat in carved chairs that would have made an appropriate dining-room suite for Macbeth—*à la* Lyceum—waited on by a line of tall vassals who joined from time to time in the conversation, like retainers in Walter Scott's novels.

After a successful first ascent of the Leila (*circa* 13,400ft.) we were ready for the most novel part of my last journey, of which I propose here to give some account.

It had for years been a matter of curiosity to me to penetrate the "No Man's Land" west of Suanetia and between the rivers Ingur and Kodor. Mr. Grove, in his capital book, "The Frosty Caucasus," published in 1875, had quoted the tales told by the Urusbieh hunters of their great hunting ground. He had written on his last page: "Of a great tract of magnificent country, scored by deep valleys, watered by powerful streams, and covered by a mighty forest. It has no inhabitant whatever so far as we could learn, and the solitude of the district is only disturbed when a few hunters from the north venture into it after the game, in which it is said to abound. There would be difficulty, no doubt, in exploring it, and danger from malaria; but some hardship might well be undergone, and some risk run, to see these magnificent untrodden glens."

Such a description was in itself well calculated to stir curiosity. But all we heard on the road only added to the mystery of the Great Forest. Russian officials gravely repeated strange tales of a race of wild men who had no villages, but appeared naked and gibbering in the depth of the woods, who lived on berries, and were without firearms. One informant added precision to the tale by assuring us that these creatures were the offspring of *crétins* banished in old times out of Suanetia.

Fifty years ago an Englishman, a Mr. Spencer, one of those who instigated the Circassians in their struggle with Russia by holding out expectations they had no power to fulfil, wrote a distressingly vague account of his passage through this region, where he describes the chamois as looking down on the traveller from every crag, as squirrels might from English trees. We did not see a single wild animal. But any practical or recent information was hard to come at. Footmen did pass rarely to Sukhum "by way of Neskra and Darl." That much we at length elicited, and Prince Atar promised to procure us the two hunters who knew best the tracks in the forest.

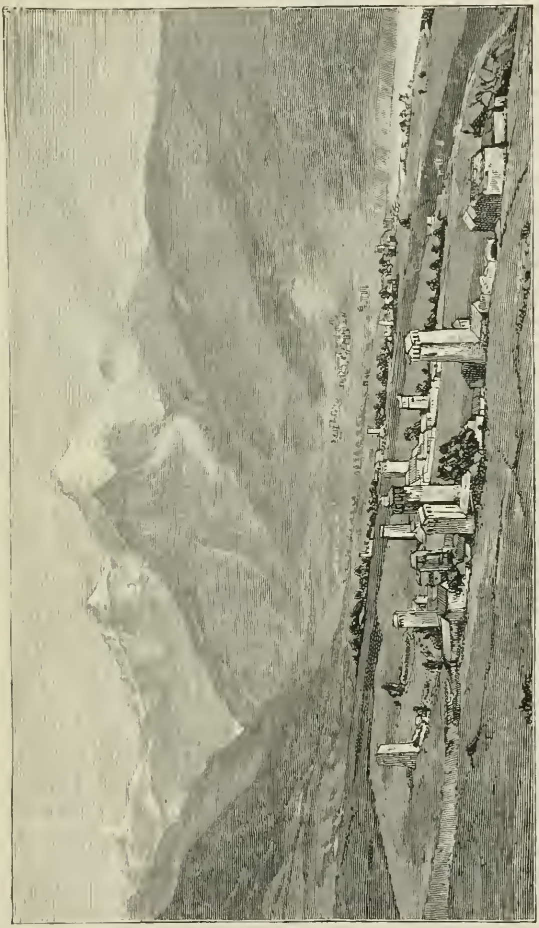
Wild creatures these hunters proved, yielding to every impulse, little accustomed to any form of control, and with the half-savage, half-childish demeanour general in Suanetia twenty years ago. They had charge of two mules, which carried our tent, luggage, and provisions for a week. One of these was nearly as unruly as its leader, kicked furiously at every steep hill, and bit at anyone who tried to guide it in the tangles of the forest. With this unpromising staff we plunged down from the last villages of Suanetia into the valley of the Nakra, leaving on our left the path, impassable for horses, that follows the Ingur to the lowlands, and on our right the comparatively beaten track that leads across the chain to the Baksan and Elbruz by the Dongusorun Pass.

I cannot go through in detail our next six days' wanderings in the wilds. We had first to cross two deep valleys only 3,000 feet above the sea and two ridges of over 9,000 feet. The first glen—the Nakra—was passed without any excessive difficulty. We camped at about 8,000 feet, among dwarf birches, on the upper verge of a great beech forest, in presence of a view I shall never forget of the whole of Suanetia, backed by its great mountains. In the night our tent was assailed by a terrific thunderstorm. The wind and hail beat against it like mad things, while our hunters cowered under the canvas screaming, "We are lost, lost, lost!" Next morning we woke to see the day break above the black edges of the retreating storm, already far down on the eastern horizon, while in front of it the great white crests of Shkara and Tetnuld rose clear and cold above the still shadowy valleys.

Next day we crossed a grass-pass, and plunged into the second valley, that of the Neskra. Here our unfortunate mules were called on to ascend and descend slopes made up of slippery roots and boulders, which a man could hardly master without the help of hands. One of the hunters resented hotly my suggestion that he might help his mule by himself carrying something, and we found ourselves facing one another with drawn dagger and revolver; a foolish situation, as neither of us meant business. In the evening, I ought to add, the man came and made a suitable apology. Drawing his dagger is, to a Suanetian, the same sort of relief to the feelings that "giving warning" is to an English domestic, and in both cases nothing serious is often meant by it. The track had now disappeared in the forest, or was only from time to time faintly discernible. We reached in the afternoon a bridge over the Neskra torrent. For hours we had been under timber too dense to admit of any view, even of the sky. Now, we were lost in a tangle of fallen and rotting trunks, surrounded by prostrate pines of enormous length, hardly passable even on foot. In the centre of this natural fortification (I am not sure it was entirely natural) we

Shkara.

found a maize field and a lodge in the wilderness. We called it "The Outlaw's Home," and it was perhaps as good a name as another. It is certain that this trackless forest is the resort of anybody who gets into trouble. Before we set out, Prince Atar had twice solemnly warned me to keep our party together, as a forester might take one of us for an official and pay off old scores. I am afraid the caution was often disregarded, owing to my companions' taste for raspberries, which abounded in every clearing.

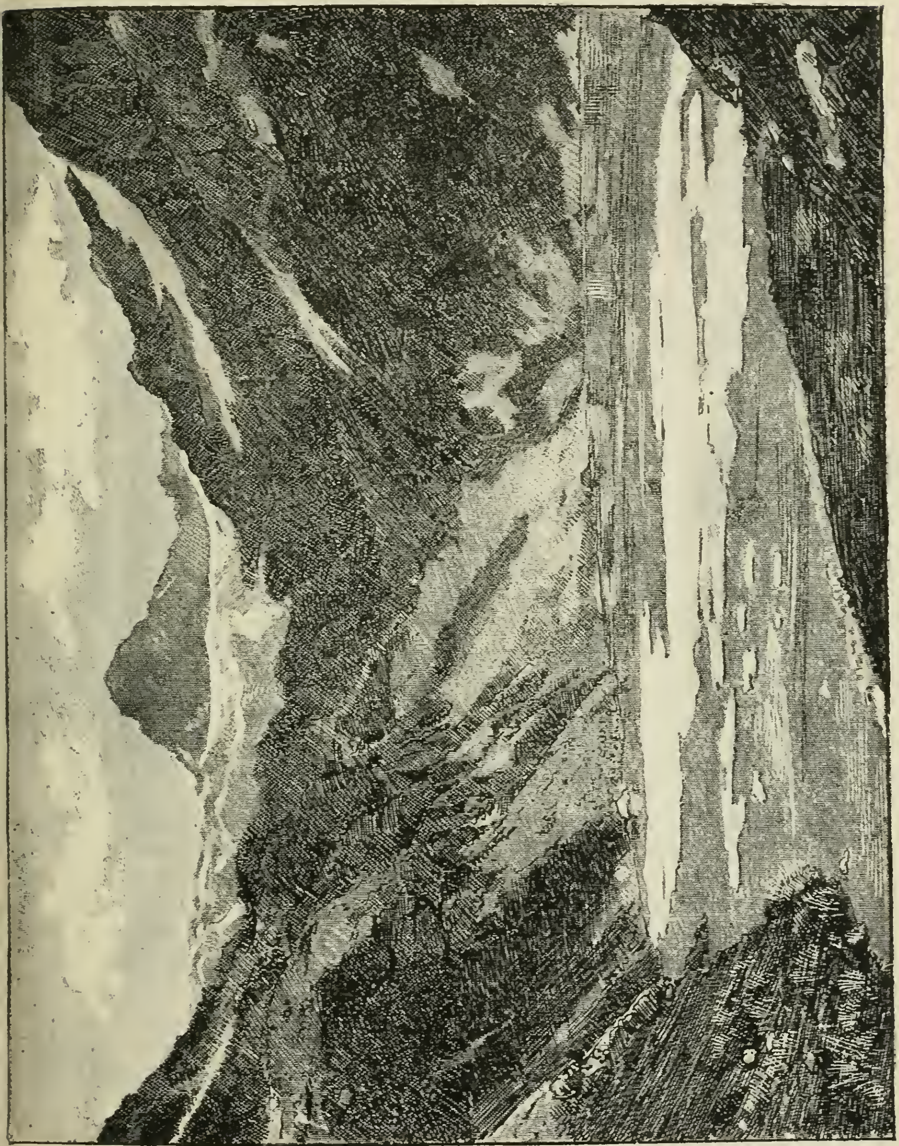


Tetnuld from above Mulakh, Suanetia, showing an ordinary Suanetian Village.

It rained hard next morning, but we were hardly conscious of it, except from the absence of any glinting lights in the forest gloom. There were three foresters in the hut, friendly fellows, who brought us maize pods to roast, and helped us up hill with our mules through the most extraordinary scramble over prostrate timber, up torrent-beds, and along forested hillsides as steep as nature could make them, and thousands of feet high. At last we emerged on the sloping open downs above the forest. The rainstorm had passed, the sun shone, and we rested happily under a pine till one of our wild children of nature set light to the inflammable moss on the lower branches. In a moment the whole tree was a pillar of flame, and we had hardly time to carry our few packets out from under it.

We were now on the edge of the broad high pastures separating the basins of the Ingur and Kodor. We could see the glacier of the Neskra, and but for clouds should have seen Elbruz over it. The downs are very broad, and took several hours to traverse. We were further delayed when our walking mutton seized an opportunity to run away. From the crest, which we reached early the following morning (the fourth day in the forest), we had a glorious prospect, and gained a further insight into the character of this strange and splendid country. In the rear we could still see the Suanetian mountains, separated from us by the blue depths of the forest gorges of the Nakra and Neskra. To the south lay a tangle of dark wooded glens, through which, like land out of a sea, rose the green pasture heights which link the rocky spurs of the great chain to two bold glacier-streaked groups lying far to the south-west of the Leila, on either side of the gorge of the Ingur, and comparatively close to the sea. Their glaciers may be compared to those of the Marmolata, in Tyrol. They have never yet attracted any notice from map-makers or travellers. Out to the west, from our very feet, stretched a spacious valley, filled, as far as the eyes could reach, with vast forests, and without sign of path or human habitation. It was ringed by rugged peaks and snowfields, mountains of 12,000 to 14,000 feet, small compared to those of Suanetia, and bearing to them the same relations the peaks west of the Gemmi do to the Bernese Alps, but fine mountains enough, tried by an Alpine standard. This was Darl, the upper valley of the Kodor. In the main chain we noted the source of the Kodor in a small glacier under a blunt rock peak; then a cluster of granitic teeth was followed by the gaps of the Kluchor and Nachar Passes, about 9,000 feet in height. Beyond these came a broad snowy mass we saw afterwards from shipboard, and then the sharp peaks round the Maruch, one of which is over 14,000 feet high.

In all the vast landscape there was no sign of permanent dwelling. Its only denizens were a few hunters or outlaws in the woods, and a few Abkhasian shepherds on the hills. To a group of these we now hastened, for our Suanetians confessed that they were altogether beyond their beat, and the ground below us was trackless. We got a handsome lad—a Paris of shepherds—to show us the right path along a narrow hog's-back



Ice Lake below the Kluchor Pass.

bright with crocuses. At the first water he left us unawares. The way in which, in apparently desolate places, in the Caucasus, visitors appear and disappear again has often reminded me of the habits of Homeric gods and goddesses. We had hoped that our difficulties were over, but we soon missed the road where a lateral torrent joined the Kodor. We lost all path, and soon got into thicker and thicker forest and greater difficulties. Our Suanetians sang, "We are lost, you are lost, the horses are lost," in amœbæan strains. At last we found ourselves at dusk in a tight place, between cliffs and the unfordable Kodor. We camped in a dank thicket, tired out with path-finding. Next morning Powell and our Swiss Maurer laboured manfully to build a bridge, but the Kodor made sport with their handiwork. We gave up the attempt and went back. Two hours higher up we found, after much search, a single trunk spanning the river. We crossed it, and roped and swam the mules. After many more hours of torrent-bed and forest we came, in the afternoon, to a broad stream barring our way, the Klutch. On the further bank we saw a good mule road, and a party of Mingrelians with unladen animals passing along it. After some parley they consented to help us over. We found we were on a military road that is being constructed from Sukhum to the Teberda, over the Kluchor Pass. We did not succeed in reaching the solitary station of Shkaltra that night. We camped beside the Kodor, in a wild orchard of fruit trees, where the ground was golden with fallen plums, and pears and walnuts abounded with no one to eat them, for the bears, traces of which were frequent, prefer raspberries.

Next day we rode into Shkaltra. It had been described to us as a post-station where everything could be procured, including horses. We found a solitary house, inhabited by a single Mingrelian down with the fever, which is the curse of this lovely wilderness, and utterly helpless. The mosquitoes and the sight of this sick man seemed to put the last touch to our horsemen's discontent, which had been growing with their distance from home. To cut my story short, as they did their leave-taking—they bolted. Jumping on the Prince's mules they suddenly cantered off, yelling triumphantly, like, what they were, naughty children, as they disappeared from view. They had not much apparent ground for exultation, for they had no pay and no food. Our meal had come to an end, and they would have to rely on robbing a maize field near Shkaltra, or wild fruit, and on the shepherds they might meet on the hills. But what is food to a Caucasian? The shepherds never see bread from spring to autumn, and very seldom treat themselves to meat.

We left our Swiss with the luggage, and walked on to Lata, the next post, twenty miles farther. There we found a friendly official, help, and horses.

In this rapid summary I feel I have given a very inadequate impression of our week in the forest, of the gigantic pines and beeches and alders, the thickness of the undergrowth of laurel, azalea, and rhododendron; the luxuriant gloom and "shady sadness" of the vales; the wide splendid landscapes unrolled from the heights; the morning light shining on a hundred ridges and resting on the fair face of distant snows; the delicate embroidery of alpine flowers spread under our feet; the scale and spaciousness of the scenery as a whole, and the delicate picturesqueness of its details.

What is to be the future of this earthly paradise—the Western Caucasus? Its old inhabitants are gone. The Abkhasians have been exiled for a quarter of a century, and their villages and their tombs are alike lost in the glorious vegetation that feeds nothing but bears and mosquitoes and fevers. Some day, perhaps, this garden of the earth will be repeopled. As yet the government is lukewarm or unpractical. Emigrants, Greek or German, arrive but slowly, and their families too often suffer severely from the fatal fever. There is little in the surroundings, moral or physical, to encourage that energy which tames Nature to human uses. Nature, on the contrary, is triumphant; not a virgin nature, but a Circe who stands ready for all new comers with a cup of Colchian poison in her beautiful hands.

Such are the first impressions of a passing traveller. Others, I hope, will see more of the little-known interior of the Western Caucasus. Sukhum is a tiny town of 1,300 inhabitants; but it has a good inn, and is a station of the Indian Telegraph, and Englishmen in charge are permanently resident there, and would doubtless speed travellers to a start. Further west, at the end of the chain, Novorossisk, the new port where corn vessels are laden directly from the wharves, is rising rapidly to importance. In the interior the old native paths are falling into disuse, but military mule-roads cross several of the passes. From Sukhum there are two such roads northwards, the Maruch and the Kluchor, leading to the Teberda and Karatchai; and there is, I believe, a third leading west. The forest scenery may grow monotonous, but granite peaks and glaciers extend some distance west of Sukhum. One great glacier (14,255 feet), resembling in form the Wildstrubel, a few miles west of the Kluchor, is superbly seen from the Black Sea, a broad silver shield studded with black bosses of rock and seamed with the faint lines of crevasses. This must have been the strange sight the Greeks noted as they sailed up the Phasis or into Dioscurias, and told stories about Prometheus or Jason. The sea at Sukhum, after any great storm, still casts up some of the loose coins left behind by these old mariners.

THE FJORT:*

THE MANNERS AND CUSTOMS OF THE NATIVE CONGO PEOPLE.

By Mr. R. E. DENNETT, Author of "Seven Years Among the Fjort," of Banana, Congo.

[Read to the Members, in the Library, October 11th, 1889.]

One can hardly, perhaps, call Nkissism a philosophy, in the sense of its being a search after wisdom ; for a native is satisfied by calling anything he cannot see or understand among things physical, Nkiss (or mystery ?), and for him that ends the matter. He acknowledges that there *is* something beyond his comprehension in these things ; but he does not dive into the depths of metaphysical philosophy, nor does he ever seem anxious to do so. Customs, habits, accident, and a gradual accumulation of knowledge have taught him much, and he does not forget his lessons. I think that is all the credit you can give him. Tradition has handed down certain cures for diseases, discovered, probably, by accident, or intuition, or observation ; he has divided his year into two seasons—one of rain and one of sun ; his month into two parts—one of darkness and one of light, or into seven weeks of four days each. You cannot call him unobservant nor yet studious. The prophets of the Hebrews, the wise men, magicians, or soothsayers, the astrologers of Egypt, Phœnicia, Chaldæa, the Brahmin or Buddhist of the Hindoo, have their unworthy and revolting equivalent in the nganga of the Fjort. Pyramids, tombs, and statues with inscriptions, upon which more light is daily being thrown, in Egypt and Chaldæa, have their equivalent in the many Nkissisi, Nkissi, Nkissakiss of the Fjort ; but who is going to decipher the "wisdom" of the Fjort from such a record of their history ? What, if instead of having to rely on half-forgotten traditions related by old men of the tribe, or on one's own meagre observation, one could address the green spots of grass, reverenced or worshipped by a tribe or family, or wooden figure (Nkissisi) that has been in constant communication with the head of the family since it was a family, or if one could ask the thousand and one nails so securely driven into the Nkissi, or figure of the tribal god, what they were placed there for, and by whom, or even if we could get the tiny Nkissakiss, or figure, or charm, borne by an individual, to let us into the secrets of his master, why then we might bring Nkissism up to the level of a philosophy. As it is, each one of us must try to observe, and report, even if we have to report what, to many, may seem rubbish, in the hope that some of you, who, indeed, may be philosophers, may pick up a grain or two of knowledge, that in your wisdom you may extend and swell into something like an intelligent account of Nkissism. I tried, by endeavouring to describe the Nkissis, Nkissi, and Nkissakiss, and also the life of an ordinary native, to give you some idea of Nkissism as it is. It seems, however, that some people consider my attempt a failure, perhaps because my explanation was not full enough, or perhaps because my ideas do not coincide with the reader's preconceived notions of Nkissism, which very term is questioned, as if I had manufactured a new name for what a common herd of ignorant sailors have, in their conceit, termed witchcraft or fetichism. There are many men, as I have admitted, who could, if they would, give you a better idea of Nkissism than I can, but they do not seem inclined to trouble you, so I shall continue to write as much as I can about it, and you may deduce your own theory.

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* Fjort, a people inhabiting the north-west banks of the Congo. Nkissism is the name of the religion or superstition of the people, or probably, in a more or less modified form, of all the people in Central Africa who have not embraced Mohammedanism. Nzambi is the supreme good god. Nkissi, the god of evil. Nganga, the doctor, or surgeon, or priest-doctor, of the Fjort.

Has Fjort had a "divine teacher" and forgotten him, or has he never had one, and merely been following certain delusions ?

The ngangas, or priest doctors, certainly pretend that their knowledge has been originally communicated to them by some spirit, their knowledge, such as it is, being some secret handed down to them—the cure of some sickness perhaps. This slight knowledge is carefully guarded by them, only the old nganga of the tribe, or village, and the man who is to succeed him, having any knowledge of it. They both wear distinguishing ornaments. As there are many evils to avoid, and the secret cure for each is perhaps only known to a few, it follows that there are many ngangas. The ngangas know their superiority to the people, and they make them feel it, until the people have become their very servants. Every new discovery widens the distance between the nganga and the people, and encourages the nganga to still further impose upon the people, until at this time we cannot suppose that Nkissism is the pure belief it once may have been. We may presume that there was a time when (1) Nzambi alone was known to Fjort. (2) Then sickness overtook poor Fjort, and he suffered pain. This he did not understand. It was not good. He feared it. At length he died. This was terrible. He fell prostrate, and raised this mysterious evil to the level of a god. Chance or observation raised up a doctor, or surgeon, or as (3) Fjort calls him a Nganga Nkiss. (4) Fire burnt him, water drowned him, without rain he hungered, sickness puzzled him. (5) The evil in fire could be avoided, as also that in water, he could pray his Nkississi to send him rain ; but sickness, the main cause of much-dreaded death, he could only avoid by the help of the Nganga Nkissi (6) How did the nganga cure him ? By the help of herbs. Then, as only the evil spirit could cure the evil he visited them with, Nkiss must also dwell in trees, and plants, and herbs. (7) But now that evil was discovered in herbs, it struck Fjort that perhaps his brethren put this poison in their food, and that this was the secret cause of all their sickness and death. (8) Up to the present we have only heard, "Anje Nkissi quiarko," or "You have Nkissi" (evil, pain) if you are wicked. (9) But now we begin to hear, "Anje leudorchi quiarko," or "You have poison in you," or "You are a poisoner." (10) And now is the time when all the powers of the ngangas (ministers of Nkissi, or the god of evil), we can imagine, had full play, and they commenced to impose upon the people by setting up their wooden images (not of Nzambi) of Nkissi, into which the petitioner making his complaint drove a nail, and paid the nganga his fee. (11) Up till now probably the head of each family was the only nganga, but hereafter their name is legion, and every means of avoiding the supposed evil Fjort continually feared was resorted to, as an instrument of extorting money from him. (12) Hence the institution of the personal god, or charm, or Nkissakiss, or little Nkissi, which is so heavily laden with malongas or medicines, and is the boon companion of every Nkissist, hence the food in actions forbidden or "Chinas" or "Kazeelas.

It is strange that the translation of the native word Nclotschi by the Portuguese sailors of old, into "feeticiers" should have been adopted by the natives until now we are obliged to use the words "witch," and "witchcraft," or fetishism, to describe the

Nclotschi and Nkissism of the present day. The English have heard the natives talk of poison "Ngilly," and this being what the Nkissikissi are charged with, the Nkissikissi is termed by them "gilly-gilly."

We must perceive that Fjort has been baffled, but "we must make the discovery with sympathy, not exultation." Baffled, yes, and perverted, led away by fear and superstition, to worship what he most feared—the evil spirit Nkiss. Nzambi was too good to cause evil, although Fjort died according to his will, and could not die until he wished it. Nkiss, who visited Fjort with all sorts of evil alone, he thought, could prevent this evil from coming upon him. Fjort, therefore, beseeched Nkiss not to let evil overtake him. Thus the real greatness of Nzambi faded away in the presence of the fearful Nkiss, until, as at present, the latter is the god. But how did Fjort thus become acquainted with the good Nzambi and the evil Nkiss? It is impossible to penetrate through the vagueness of the Zendavesta, and to detect what was latent in the minds of of those who composed it or believed in it. How much more impossible is it to fathom the unwritten thoughts of those unknown nganga who have made Nkissism what it is? Although Fjort acknowledged a good and evil spirit, the idea of a struggle between the good one and the evil has not as yet struck him. He is waiting for a great nganga, for a Zerduochi, or a Khoung foutsen, to point out to him the power of the good one. Who shall be his prophet—a follower of Christ, or of Mahomet? The word or the sword, gentleness or fear? Which, I ask you, is the most likely to bring poor Fjort the nearer to his God? Will the sword go before and prepare the way for the Word? How far then is Fjort still from the end of the struggle (which we in common fight with him)? How long will he be in getting an answer to the question that even puzzles some of us? How long must he fight before he can find rest? It is strange that Indian, Chinese, and Persian reformers appear to have believed that they were bringing back some old order or principle which had been violated, or for which some modern practices and notions had been substituted. It is strange, that by the writings of the most ancient African missionaries, it is an established fact that the name by which the good spirit was known to Fjort was Nzambi Mpongo. It would appear as if at one time God had revealed Himself to *all* mankind; but that just as the children of Israel, with all their advantages, fell into idolatry, so the other children of men less favoured had fallen away. Then in the struggle that follows the spirit of God is apparent in the reformers of the different faiths. Man, as it were, "in the sweat of his face is eating his bread," for by the study of our greatest thinkers, and that alone, little by little, is he learning to know himself and his position with respect to his God. Every day our minds are being shocked by new theories that shatter long-lived dogmas. We then are not yet perfect. Cannot we then sympathise with Fjort, who as yet has not turned the corner, and hope that time and a reasonable course of training may do for him what it has done for us.

Do you think that we should throw away the lessons, which, in our progress, we have learnt, and attempt, by some conjuring, to make poor Fjort spell "thought" before we have taught him English or even his A B C? Can we, who practice Christianity so poorly, after a trial of 1888 years, expect to make Fjort a Christian in a day? Are we to teach him Latin, Greek, singing, and abstract Christianity, before we have taught him what earth, fire, water, and life are? The earth in Iran was overgrown with weeds. Nothing was done to till it or make it fruitful. Slavish dependence upon seasons. All this we find in Africa. Surely Fjort needs someone to prove to him that the earth is meant to produce good, that the bad is to be weeded out. But after all, though poor Fjort has been on the wrong track, there is enough good in him to humble so-called Christians; enough nobleness in him, too, at times, to shame our cowardice ; enough endurance to make us wish for more ; glimpses of virtue enough to prove to all but the wilfully blind that there is One far above us all, from us all, from whom there pours a stream of light, that searches all our hearts—a fountain of love, joy, peace, long-suffering, gentleness, faith, self-control, and goodness.

Should you not first teach Fjort that his creed is a lie, and prove it to him, by showing him that the poison the earth brings forth can be rooted out, and the earth made fertile ?

First agriculture, then commerce, and such useful trades and arts as are necessary to a community living in peace ; then education, so that as he came to know more of his surroundings his fears of Nkiss would subside ; then teach him the love of God, and then Christianity.

Naphtha Springs at Baku.—*Deutsche Rundschau*, Bd. 12, Heft iii., contradicts on official authority the reports that the wells at Baku are beginning to fail. The yield in 1888 was nearly 2,843 tons of raw naphtha, about 15·1 per cent more than in the preceding year ; while up to August 1st, 1889, the quantity obtained was 57½ tons more than during the same period of 1888. The rise in price is due to the increased number of distilleries owing to the ever-increasing demand for the residuary products. The 240 or 250 borings now working are insufficient ; 150 more might be added with advantage.—*The Scottish Geographical Magazine.*

M. Camille Douls.—France in the past year has had, like Germany, to mourn the loss of a young and intrepid African traveller ; for Camille Douls, distinguished as the explorer of the Western Sahara, appears to have been treacherously assassinated while making his way across the desert to Timbuktu. M. Douls was born at Bordes in the department of Aveyron in 1864, and received his education at the Lyceum of Rodez, the capital of that department. In 1881 he visited the Antilles and Central America, and four years later, Marocco, where, during a residence of some length, he studied the language, manners, and customs of the Arabs. Here he conceived the bold idea of exploring the hitherto unknown western parts of the Sahara. In prosecution of this design he passed over to the Canary Islands, and there engaged the services of some fishermen to take him over to the desert coast, in the neighbourhood of Cape Garnet. Having been landed there in safety, he proceeded inland, alone and in the disguise of a Mussulman. He soon fell into the hands of a nomad party, and only saved his life by agreeing to profess Mohammedanism and become a member of the tribe to which his captors belonged. With this roving band he travelled over a great part of the Western Sahara, reaching the tropic of Cancer and finally making his escape over the Atlas to Marocco. Here, however, he was imprisoned by the Sultan, and only regained his liberty through the interference on his behalf of the British Minister. After this he came to London (in 1887), and published in the *Times* newspaper a narrative of his romantic adventures. Appearing before the Royal Geographical Society, he exhibited a rough route-map of his wanderings, which embraced wide tracts previously quite unknown. Having next year returned to his native country he there obtained funds to enable him to undertake a second journey, and for this purpose he left Paris in June, 1888. News afterwards came that a traveller, in the disguise of a Mussulman, had been murdered by his guides in the Sahara, between the oases of Alouef and Aklabi, which lie about 560 miles south from Oran on the Mediterranean coast. There can be little doubt that this unfortunate traveller was Camille Douls. It would appear that he reached the desert by way of Tangiers and Tafilet. It was his great desire to emulate the deeds of René Caillé, who some seventy years ago made himself illustrious by his explorations in the same desert. (Subscriptions are being raised for a monument to this explorer.)—*The Scottish Geographical Magazine.*

THE NEGOTIATIONS OF DUKE FREDERICK III. OF HOLSTEIN-GOTTORP WITH RUSSIA AND PERSIA, CONCERNING THE SCHEME FOR BRINGING THE PERSIAN TRADE THROUGH HOLSTEIN-GOTTORP (1633-1640 A.D.)*

[Read to the Members, in the Library, Friday, December 20th, 1889.]

IN the midst of the horrors of the Thirty Years' War, Duke Frederick strenuously endeavoured to preserve peace in his dominions, but finally was drawn into the strife, and then set himself the task of repairing the widespread damage which war had caused in his dukedom. His ceaseless efforts in this direction, unfortunately, were not always rewarded by success, and many misunderstandings arose.

Among his various projects having this object in view was the one by which he endeavoured to give new life to the commerce of his dukedom, and especially to attract the Persian silk trade to the newly-founded town, Friedrichsstadt. It was the time when the English, Dutch, and Danes were endeavouring to open up new routes, with reference more particularly to the trade of the Levant.

The King of Denmark had, in 1618, fitted out an expedition to the island of Ceylon, which in its results implied a challenge to the Duke, which he could not but accept, for it affected seriously the interests of the new town, upon the prosperity of which the Duke had set his heart.

Friedrichsstadt owed its origin to the tolerance shown by him, at a time when religious intolerance was rife. In 1609, the Synod of Dortrecht, in Holland, gave its decision in the dispute between the Gomarists, or strict reformers, and the Remonstrants, which was unfavourable to the latter, and from that time they suffered from so many oppressions and persecutions in Holland that a number of them expressed a desire to found a new home elsewhere, and turned to Duke Frederick for assistance. His reply was favourable to the design, and, besides informing them that their religious opinions would not be allowed, so far as he was concerned, to interfere with their transmigration to his dominions, he gave them permission to found a new town on the banks of the Eider, at the mouth of the Threne.

By decrees of the 27th September and the 17th November, 1619, the Duke, in spite of the objections of the court chaplain, Jacob Fabricius, granted to the Remonstrants the free exercise of religion, and other important privileges, for the new town.

In 1621 the first steps were taken towards the founding of the town, which was to be called Friedrichsstadt, in honour of their protector. The Duke allowed his new subjects to draft their municipal constitution in accordance with their own ideas and customs, and they sketched out for themselves their police arrangements and municipal bye-laws, and on the 20th March, 1635, their constitution and privileges were confirmed by the Duke.

As was to be expected, the new town, so favourably situated for trade and navigation, rose suddenly into importance, giving a favourable opportunity to the opulent Dutch colonists to turn to good account their commercial spirit, and the employment of their combined capital; for the Dutch at that day, as well as in our own times, had the reputation of being good business men. As a consequence of these circumstances, and the favourable influences at work at the court, the new town presented so vigorous an appearance as to remind one of the older Dutch cities, and came to be called a second Amsterdam, which character it still retains.

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* From the "Geschichte des Hauses Holstein-Gottorp," by the Chamberlain F. von Krogh. MSS. Translated from the *Weser Zeitung*, October 8th, 1889, by T. W. S.

About this time there appeared at the ducal residence of Gottorp one Otto Brüggemann, a wholesale merchant of Hamburg, who, having obtained access to the Duke, received authority from him to attempt to open a new route for the commerce of the Levant, which should bring the trade through the Duchy of Holstein-Gottorp.

The trade of Persia was, at that time, of great commercial importance, and Persian silk, which was then unexcelled for fineness, strength, and lustre, was one of the principal commodities. These goods, as well as the East Indian products, which partly came through Persia, were burdened out of all proportion with costs of transport, besides being, at the same time, subject to great risks. The route was by caravan from Persia through the Turkish provinces to Smyrna, and thence by sea to Europe, and of course customs dues had to be paid on the transit of the goods through the Turkish dominions.

The first thing that Brüggemann had to do was to discover how those heavy charges could be avoided, or even reduced. A necessary preliminary for the solution of this problem was the release from duty, not only of the transit of goods through Persia, but also on the exports from Persia itself; and only on some such basis as this could the negotiations with the Shah be commenced.

A further supposition of the Brüggemann scheme was the restoration of a waterway through Russia. For the accomplishment of this, the great rivers of Russia, connected by canals, should be utilised; but for this to be done it became necessary to interest Russia in the scheme, and negotiations had to be opened with that country: and it was only upon the hypothesis of free exports from Persia, free transit through Persia and Russia, and of the formation of the waterway through Russia, that the new route would effect a sufficient reduction in the cost of transport of the Persian manufactures and the Indian products for it to have an assured success. If this line of transport could be established, it would undoubtedly open up a bright future for the merchant towns of Holstein-Gottorp, and especially so in the case of the new town of Friedrichsstadt.

This was the scheme which Brüggemann laid before the Duke, the accomplishment of which did not appear impossible, and the success of which meant so much for his dominions, and it remained for him to determine whether the experiment should be made, and if so to despatch special embassies to the Shah of Persia and to the Russian Emperor to commence negotiations.

The Duke declared himself favourable to the scheme, and was prepared to devote both time and money to its completion. He realised that a project which would end in attracting the trade of the world through Southern Schleswig must tend to strengthen his authority.

The leadership of the embassy was entrusted to the ducal councillor, Phillipp Crusius, who was well known as a man of deep insight, and he was to be guided by Brüggemann in the working out of the scheme.

In addition to the chiefs the embassy was to consist of a marshal, a counsel and secretary, equerry, physician, chamberlains, chaplain, four gentlemen-in-waiting, four ducal pages, four other pages, musicians, various artificers (such as watchmakers, saddlers, gunsmiths, tailors, and shoemakers), halberd bearers, and a number of servants for the kitchen, for the horses, and to wait upon the members of the embassy. Adam Olearius, the learned librarian of the Duke of Gottorp, was appointed counsel and secretary, and to this we owe his celebrated work, "Beschreibung der neuen Orientalischen Reise," which gives a vivid description of the state of Russia in those days, and is of great value as a contribution towards a history of such towns as Riga and Reval, and has been recognised as an authority even in much later times. The *enfant terrible* of the expedition, Andreas Reusner (who joined it afterwards), upon the return journey, withdrew to Sweden, where, by indiscreet and not altogether true communications, he caused the embassy to be wrongly censured by the Duke.

Instructions were given to Brüggemann and Crusius how to deal with the Shah of Persia on the question of freedom for the trade, and, considering the prevailing discord between Persia and Turkey, it is probable that the discussion would be directed to the question (which would be of great importance to the Persian government) as to how far the success or failure of the scheme would affect the income from transit dues of the two countries, Persia and Turkey.

The Duke was not fortunate, however, in his selection of the men to carry on the negotiations. Brüggemann went beyond his instructions and completely compromised the Duke ; the official director of the embassy, Crusius, was unequal to the task of leading so important an expedition ; and the various members of the embassy were so at loggerheads with each other that quarrels and dissensions arose on every hand. Apart from this the embassy was despatched with carefully-prepared instructions, which left no doubt as to the intentions of the Duke upon the methods of working out the project, upon the establishment of trade, and as to the early completion of treaties with the Russian government.

The embassy left Gottorp on October 22nd, 1633, Hamburg on the 23rd, staying at Lübeck on the 24th, and on the 27th embarked at Travemünde for Riga, where they arrived on November 14th. The stay here lasted for five weeks, during which time, on the 21st November, the embassy made important presents to the Council of Riga, including an ox, several sheep, fowls, hares, deer, bread, and an ohm of Rhine wine ; and on the 24th they were the guests at a brilliant banquet. From Riga they set out for Dorpat in thirty-one sledges for the baggage and guides, and in fifteen for the embassy proper. From Dorpat their journey lay through Narva to Reval, and on the 14th August, 1634, the embassy entered Moscow, where, on the 19th, they were received in public audience by the Grand Duke Michael Feodorowitch Romanoff. To their surprise, the Grand Duke unexpectedly brought forward counter proposals, based upon conditions which the embassy could only accept *ad recipiendum;* and as he insisted upon the concession of his terms, the embassy decided to return to Gottorp, when they reported to Duke Frederick, and eventually induced him to accept the terms of the Grand Duke Michael.

Then commenced their second journey to Moscow, where, on the 3rd April, 1636, they were again received in audience by the Grand Duke. The journey towards Persia was commenced on the 9th June, and they entered Ispahan on the 3rd August, 1637. The return journey to Gottorp was commenced on the 21st December in the same year, the embassy going *via* Reval, and thence by sea to Neustadt, where they landed on the 22nd July, 1638, five and a half years after the date of their first departure.

The very heavy expenses connected with the expedition were still further increased by the arrival of the Persian envoy in Gottorp with a following of twenty-four persons, who lived there from July to September at the expense of the Duke, as did the Russian envoy who came to Schleswig shortly after, and remained for a still longer period.

On the part of Holstein-Gottorp it was desired that the concession of duty-free export and transit of goods should be granted exclusively to their own merchants, to which the Shah of Persia could not be induced to give his assent. On the other hand Russia demanded a sum of 600,000 thalers per annum for the concession of freedom from transit duty on these goods, and to this the Duke hesitated to agree. Lastly, to add to the trouble, the Swedish government, being wishful to secure some advantage from the project, desired a pledge from Moscow that the termination of the new route should be through the then Swedish Livonia, and not *via* Archangel. As this course would not only increase the cost of transport, but would also subject the goods to further transit dues, and having secured a pledge from Persia that the duty-free export would not be granted to any other nation to the exclusion of his subjects, the Duke resolved, rather than make such great sacrifices, to postpone the whole project, *ad calendas Græcas.* The negotiations would be broken off, but in the meantime the Duke would keep in view the possible making of a canal from Friedrichsstadt to the Baltic.

Immediately after the departure of the Persian and Russian ambassadors two criminal processes were commenced in the supreme court of Schleswig against the author of the scheme, Otto Brüggemann.

The task which the embassy had to accomplish, according to the Duke's instructions, had been to effect, by the conclusion of commercial treaties, the establishment of a route for the Persian and Indian trade across the Caspian, through Russia, and across the Baltic to Holstein-Gottorp. It was proved that Brüggemann had gone beyond his instructions, and had offered Aleppo and other Syrian and Anatolian places to the Shah of Persia to secure his support to the project. He pointed out that through the opening of the new route Turkey would be seriously damaged by the diminution of her revenue, consequent upon the withdrawal of the transit dues ; and, further, that if the Turks were weakened in this manner, Persia, with a prospect of a confederacy with Christendom, might be able to successfully attack Turkey ; and that the ruin of the common foe, the Turk, would clear the way for the conclusion of commercial treaties. The Shah was to supply an army of 10,000 to 15,000 soldiers, and the Duke was to send in three ships some hundreds of soldiers (most of them well versed in military matters) to act as officers. Brüggemann had further given the Shah to understand that the Duke stood in such firm alliance with the Roman Emperor, the kings of Spain, Poland, England, Denmark, and Sweden, that these Christian powers would send out separate armies by land and sea to act in consort with that of Persia.

The finding of the court was that Brüggemann had attempted to bring about an altogether impracticable, if not impossible, combination, which was in contradiction to his instructions as to the object of his mission.

He was further found guilty of allowing false evidences of crime to be brought against Adam Olearius, causing that learned man to take refuge in an Augustine monastery. And, further, that he had reopened and altered letters from the embassy to the Duke, so that he was continually deceived by false reports. Not only was he convicted of causing much unnecessary expense, but even of embezzlement to the amount of 46,000 thalers.

In addition to all this the private life of Brüggemann was made an object of inquiry by the court, and it was found that he, who had left a wife behind in Hamburg, had been living with an Armenian woman, and had been in the habit of paying visits, dressed in servant's clothes, to Armenian married women, "thereby," says the report, "bringing an indelible stain on the Christian name." And lastly, that he had cudgelled to death a Persian quartermaster, and then given over his house to be plundered. On the ground of these results of the inquiry, the court decided, "that in justice to the Principality of Schleswig the defendant must be severely punished, and held up to others as a hateful example." In the end Brüggemann was sentenced to execution, which was carried into effect on the 5th May, 1640.

This project, which had raised such great expectations, having fallen through, it became a matter of reproach to Duke Frederick that he should have sacrificed so much time and money to this adventurer, large sums of money uselessly squandered, very much to the embarrassment of the Gottorp finances.

But this plan of bringing the trade of the world through Southern Schleswig, which we here first find mentioned, continually reappears either in the form of railways or canals, and the records supply a mass of rich material for the critical examination of the history of these schemes, as well as of the idea of making the natural waterways of Russia more useful to trade by canal connections, which was followed up later on under Catherine II. and the Emperor Paul, and again with a larger amount of success in more recent times.

How firmly the Duke believed in the accomplishment of the great project is shown by the founding of the "Persian Company," which had its seat in Friedrichsstadt, and was to take in hand the Persian trade, having special care of the interests of the new town, which had become, not in all things a second Amsterdam, but a place of refuge for persons of various sects and creeds, where Lutherans, Catholics, Remonstrants, Mennonites, and Jews could lead a life of peaceful concord.

. . . .

Apart from some occasional unpleasant incidents, the attempt of the Duke to make Friedrichsstadt an asylum for the various religious sects has been accompanied by a large measure of success. In the founding of Friedrichsstadt and the issue of the edict of the 24th February, 1625, granting the freedom of religious opinion, Frederick III., in an intolerant age, had to deal with an orthodox Camarilla, and an intolerant court chaplain in Jacob Fabricius, and the town still stands as a lasting memorial to the sincere spirit of tolerance which animated and kept him from becoming confused in the conflict between expediency and truth.

Explorations by Dr. Zintgraff in the Cameroons Region.—Dr. Zintgraff, to whose travels in the country of the Cameroons we have before alluded (Proceedings R.G.S., 1888, p. 648), has recently made an interesting journey from the Cameroons to Adamaua. At the end of December, 1888, he set out from the Barombi station, and on reaching the country of the Banyanga had to force a passage, owing to the hostility of the natives. After a compulsory stay of three months in the territory of the Bali, he proceeded in April to the Bafut, but in consequence of a threatened attack by this tribe he was obliged to make a toilsome detour of five days' march through a partly uninhabited region. At Donga his surveys come into connection with those of Flegel. The last news received from the traveller was from Ibi on the Benue (11th June, 1889), whence he intended to proceed to Jola, returning to the station in Bali-land by way of Bakundi, Gashka, and Bagnio.—*Proceedings of the Royal Geographical Society.*

Death of Dr. L. Wolf.—We hear with regret of the death of Dr. L. Wolf, the well-known African traveller, which happened suddenly on the 26th June last, in Togo Land, while conducting an expedition across the borders against the kingdom of Dahomey. Dr. Wolf was chiefly known in connection with his explorations in the South Congo Basin. In 1884-5 he took part in Wissmann's great Kassai expedition, being appointed second in command. Upon Wissmann's return to the coast through ill-health in July, 1885, Dr. Wolf continued the work of exploration, which resulted in the opening up of the Sankuru. Subsequently he was chosen to conduct an expedition into the rear of the German territory of Togo Land, where he was engaged up to the time of his death in surveying the country, founding stations and discovering fresh routes. The results of the recent excursions made by him and Lieut. Kling have been embodied in a new map of this region constructed by Lieut. v. d. Vecht.—*Proceedings of the Royal Geographical Society.*

HIS EXCELLENCY LI HUNG-CHANG, VICEROY OF CHINA.

[Note communicated by the Rev. F. Galpin, of Hankow, China.]

(See the Frontispiece to this volume.)

Li Hung-chang has been for many years the chief man in China. European and American syndicates look first and last to his excellency for concessions and contracts. Ambassadors and ministers know that without his consent their negotiations must fail. In China, too, at every crisis all China waits for his excellency to show a lead. Not that China as readily follows. It would be an unspeakable boon to China if the great viceroy could have a free hand for ten years. We write thus not because we might expect any liberal outburst of favours for Englishmen.

The viceroy is first and last a Chinaman. His watchword is "China and her treasures and commerce for the Chinese." He is rightly most loyal to his own country. When he makes a concession to a foreign nation which seems to confer any advantage to Europeans, he does so because the advance will result in a tenfold advantage to his own country. He never seeks popularity, and probably never tried to trim his sails to suit a popular wind ; neither is he afraid of opposition. If he had been a timid or fearful man we should never have heard of him. It is only fair to suppose that his excellency's close acquaintance and co-operation with our lamented brave and good Gordon, 30 years ago, has considerably helped to make him what he really is, a soldier-statesman, fighting against the huge and obstinate anti-foreign party so long dominant in China. The viceroy is eminently practical—he possesses keen practical foresight and insight—so that, with patience and tact (of which he is a master), his doctrinnaire opponents are, sooner or later, defeated.

He is known to be greatly in favour of railways for China, but the difficulties of overcoming the enemies of progress are greater than the financial, engineering, and other problems that will have to be solved. The recent controversy amongst Chinese magnates on this great railway question illustrates the power of the viceroy and his skill as a master of diplomacy. When Viceroy Tsang Chi-tung opposed Li's railway to connect Peking with Tientsin, Tsang, who is opposed to all railways, skilfully hindered Li's scheme by suggesting an impracticable one—a line from Peking to Hankow, extending over 700 miles, to be made by Chinese labour, and to be carried out with Chinese capital and constructed with Chinese material. When this counter plan was sent to Li from the throne for his opinion, instead of showing how difficult such a work would be, he consents to the counter plan, but submits that his Excellency Tsang be transferred from Canton to Hankow to carry out his own scheme ! Tsang most unwillingly has been transferred, and so railways are waiting for the next move on the board.

Just a year ago Mr. Jones, of the Peace Society, had an interview with his excellency the viceroy, who expressed warm approval of the objects of the association, asked many questions, and suggested that it would be a good thing if the society could convert some of the Great Powers—Russia, for example—to their views !

The viceroy is a great friend and help of the progress of the Western knowledge among the scholars of China. He is in his sixty-eighth year, and we gladly quote the following from the *Sheh Pao*: "Though on the verge of man's allotted years, his excellency still retains a high degree of mental and bodily vigour, and bids fair to pilot the ship of state for another decade."

The same paper (*Chinese Times*) says: "The amount of work the viceroy gets through each day in a very rapid, systematic, and thorough way too, is very surprising, but does not seem to overtax him. The duties of a Chinese magnate in office are excessively multifarious, and comprise momentous references from the Imperial Government and detail of a most trivial kind, and no European minister has such a range of great and small questions put before him endlessly day by day."

ON THE OPENING OF THE YANGTSE-KIANG RIVER TO NAVIGATION.

The Chefoo Convention of 1876, entered into between Sir Thomas Wade, on behalf of the British Government, and Li Hung-Chang, Viceroy of Chili, on behalf of the Chinese, stipulated for the opening of certain new ports on the coast of China, and on the Yangtse river, as a partial compensation for the murder of Margary in the previous year, while engaged upon an expedition designed to open up a new trade route through Burmah to Western China. One of the clauses of the convention stipulated for the immediate opening of Ichang, a port situated 1,000 miles up the Yangtse river, and at the foot of the rapids, as well as for the conditional opening of Chung-King, a port situated nearly 500 miles higher up, the commercial metropolis of Western China itself. The condition precedent of the opening of Chung-King was the proved navigability of the "rapid" section of the river. The clause in which this agreement was come to was expressed negatively—"Chung-King shall not be opened until steamers have succeeded in ascending the river."

This clause remained a dead letter for ten years, when Mr. Archibald Little, a merchant of Ichang, applied for leave to attempt the navigation. The reasonableness of this request was admitted by the Pekin Government, and permission promised. Mr. Little went to London, and there proceeded to form a company to take advantage of the convention by building a steamer to run to Chung-King, and so open the port. A special steamer, a stern-wheeler, was constructed on the Clyde, shipped to Shanghai in pieces, there re-erected, and in February 1888, was taken by Mr. Little to Ichang, at which point it had been arranged that a "permit" to go on to Chung-King should be handed him by the local authorities.

But the local authorities, in the person of the Viceroy of Szechuen, the province of which Chung-King is the commercial capital, had determined that no steamer should invade his jurisdiction, and succeeded in stopping the Kuling, as Mr. Little's steamer was called, at Ichang. Nearly two years were spent in negotiations between our Foreign Office, the Pekin authorities, and the local officials, which, owing largely to the want of determination on the part of the British minister in China, Sir John Walshaw, unfortunately proved abortive. Ultimately, in December 1889, the Chinese, by the intermediary of Sir Robert Hart, the Inspector-General of the Chinese customs, entered into an agreement with the Upper Yangtse Steam Navigation Company, the owners of the steamer, to purchase the Kuling, and so compensate the shareholders for the unjustifiable delay which was fast ruining them. The small capital of the company was exhausted, the money they had succeeded in raising upon debentures was all spent, and Mr. Little's company was reluctantly compelled to submit to *vis* major and temporarily to abandon their scheme. Meanwhile the Chinese had submitted a counter-proposition to our Government, viz., to open the port of Chung-King to British trade and residence on the same conditions as those prevailing at the other "treaty" ports, with the stipulation that the right to run steamers there should be temporarily waived.

Negotiations upon these points have been going on ever since the Kuling was sold, which have at last resulted in the opening of Chung-King. It appears that British steamers will not have a right to run to the port until Chinese steamers ply there. We shall look with anxiety to learn when and under what conditions the

Chinese will run *their* steamers there. In the meanwhile it is satisfactory to know that the clause in the Chefoo Convention in regard to the opening of Chung-King to foreign trade has not been allowed to remain a dead letter any longer, and that, thanks to the exertions of Mr. Little and his company, a fresh extension of the area open to British commerce in the far East has been achieved. Upon the possibilities thus afforded and the benefits to be obtained by this latest advance we can as yet only speculate.

NOTE TO PAPER.

In my opinion the opening of Chung King to foreign trade is the most important step that has been made in China for many years, and it ought to be of immense benefit to this country, both in increasing trade in cotton goods and also in developing supplies of raw silk from the great West of China silk district. When foreigners are allowed to open silk filatures in Szechuen, and the Chinese imitate their methods, there will be an enormous field for the silk trade supply of raw material. This is only one of the many advantages that the opening up of commerce and the residence of Europeans is likely to bring about, and it is beyond and in addition to the advantages derived from the abolition of inland taxation at the numerous barriers and local custom houses between Ichang and Chung-King, which at present increase the cost of Manchester goods to the residents of Western China. For these benefits Lancashire has to thank Mr. Little and the Chamber of Commerce and the Manchester Geographical Society. A. A. K.

Mount Ruwenzori.—Colonel Sir W. F. Butler has addressed a letter to us, in which he points out that the honour of the discovery or re-discovery of Ruwenzori, the chief peak of the "Mountains of the Moon," belongs to Mason Bey, who obtained a distant view of it when making a reconnaissance of Albert Nyanza by order of General Gordon in 1877. Mason Bey's report is published in the "Proceedings" of our Society, vol. xxii. (old series), p. 225, and contains the following brief allusion (p. 227) to the mountain seen from the deck of his little steamer when at the south-eastern end of the lake: "On both sides of the lake the mountains diminish in altitude; and to the southward, at the foot of the lake and between the two ranges, was a large isolated mountain." The distance of Ruwenzori from Mason Bey's position would be about 40 miles. It is to be remarked that Mason Bey, in his letter to us on the river at the southern end of Albert Nyanza ("Proceedings R.G.S.," 1890, p. 40), makes no allusion to his having sighted the famous mountain from that point. *Proceedings of the Royal Geographical Society.*

The Trade of Marocco.—Sir J. H. Drummond-Hay believes that Marocco might export a large quantity of agricultural produce under a just and prudent Government. The soil is very fertile, particularly in the southern provinces, and produces wheat, barley, maize, and other grains, cotton, oil, fruits, cattle, &c. The people are strong and intelligent, and the climate more temperate than in southern Spain. But the inhabitants do not care to waste their labour in producing more than suffices for their maintenance, when any surplus there may be is taken from them by the tax collectors, and any show of wealth attracts the unpleasant attentions of the Government officials. The prohibitions and duties on exports also exercise a prejudicial influence on agriculture, as was proved in the case of maize. Sir John Drummond-Hay succeeded in getting the prohibition on the exportation of that grain removed by the Convention of 1856. The first year one vessel only was laden with maize, but in subsequent years one hundred vessels were annually laden with it, and a large quantity of fresh land was brought under cultivation. Yet, in spite of the fanaticism of the Sultan's advisers and the unsettled state of the country, trade does to some extent increase. In the years 1875-1885 the value of the imports averaged £1,033,918 annually, of which about three-fourths represented British goods. The imports at Tangier in 1887 amounted to £748,000, about £62,000 more than in the previous year.—*Chamber of Commerce Journal*, 5th December, 1889.

THE UPPER AMAZONIAN REGIONS AS A FIELD FOR ENGLISH ENTERPRISE.

BY AN ENGLISH RESIDENT.

[Communicated by Chevalier GUILLAUME, Southampton, Consul for Peru.]

IN reply to many inquiries from my countrymen at home, as to the suitability of these regions for commercial enterprise and emigration, I take this early opportunity of giving a few facts respecting this magnificent country. Situated at the base of the Andes mountains it stretches far away eastwards to the Brazilian frontier, and is one of the healthiest and most picturesque parts of the South American continent. No one who has not seen the "King of Rivers" can form an idea of its grandeur or of the immense vegetable and mineral wealth with which nature has endowed this wonderful zone. The last stage of steamboat navigation ends at Yurimaguas, a port on the Huallaga. All traffic beyond this place is carried on by means of canoes. This town and Iquitos are the two principal centres of trade, the latter being by far the most important. Iquitos is the chief Peruvian naval port on the Amazon. It is situated upon a slight eminence, in a bend of the river, and covers a large space of ground. The houses and huts are built with regard to ventilation and convenience. It is the sanatorium of the Marañon, or Upper Amazon, and is healthier by far than many of our English watering places. The temperature throughou the year may be averaged at 82° Fahr., and it seldom varies. Twenty years ago it had only 1,000 inhabitants, but now it contains 8,000, five-sixths of whom are civilised half-caste Indians, the remainder being South Americans and Europeans. Most European commodities are obtainable at moderate prices. An active trade is carried on. The imported goods are exchanged for indiarubber, which is the principal product of these regions. Preserved meats are the principal food, owing to the scarcity of fresh animal meat. Anyone with a knowledge of rearing farming stock would soon realise a large fortune in supplying the town with fresh meat. Cattle are easily reared, and sheep, goats, pigs, and poultry. The latter include a great variety of the wild Gallinacea, which stock the Amazonian forests. Llamas and four-horned sheep are reared in the vicinity of Moyobamba.

Turtles abound in all the rivers. Fishing is excellent. The woods are overrun with the porcine tribe—also with deer; and there is an abundance of feathered game. Those who have tasted peccari ham, cooked on embers in a roll of clay, as the Indians prepare it, can well realise Humboldt's innate yearning for the savoury viand—the only thing that, in all his wanderings in the New World, he regretted leaving behind him.

The forests abound in all kinds of rich cabinet woods and medicinal plants, amongst which may be mentioned the indiarubber tree, at present the most valuable; the aguana, or mahogany; the tortoise-shell wood; the cocobolo, a most valuable wood for fine cabinet work; the huacapa, a durable wood equal to lignum vitæ; and many others.

FRUITS.—The indigo plant, pistachio root, sapote, mango, pine-apple, cocoanut, and that delicious fruit the guineo, the guava, papaw, custard-apple, guamtana, alligator pear, caymito, and the marañon or cachou. From the latter an exquisite blood-purifying wine is produced. The vanilla and the vegetable ivory are met with in abundance. The natives cultivate the sugar-cane, cocoa, coffee, Indian corn, mandioca, and kidney bean, but only enough for their own use. Very fragrant tobacco is also grown near Iquitos. The soil is well adapted for growing cotton and rice. Wherever a clearing is effected the finest grass will grow equal to the best Devonshire pastures. The main stream is perfectly healthy, as also the Ucayali, Huallaga, Chambira, Pastaza, and other rivers. Fevers are only prevalent on those rivers with low banks, where there are lagoons, such as the Yavary, Napo, and Tigri.

There yet remains one article of paramount importance, which is destined to be the source of wealth to companies and private individuals, and that is "gold." All the rivers which descend from the Andes bring down large quantities of gold. A mining engineer sometime since assured me that there were, to use his own expression, "tons of gold" on the surface and in the strata about Borja, and it needs but a moderate capital to work the mines there with success. Personally, I have handled several surface nuggets as large as hedge-sparrows' eggs. This is a splendid opportunity for any mining company. Gold is also obtained a short distance up the Napo.

The gold-washings on the Alto Marañon are just now paralysed. The reason for this is that the yield has not been sufficient to defray the expenses occasioned by their method of working by manual labour. Were a company formed, and machinery employed, I am confident that the returns would amply repay the venture. The greatest depth of water is probably six feet. *En passant*, I may bring to your notice the fact that very rich gold-bearing quartz has recently been unearthed in the Alto Ucayali, and I am informed that persons are coming over from the Pacific to work these mines.

The foregoing is only a brief outline of the various products so freely scattered by Nature's lavish hand upon this much-favoured region. The country, though so little known, admits of much logical speculation that would be out of place in such a letter as the present, and not until after years of pioneer labour, and when the benign influence of Western civilisation has told upon the "noble savage," whose home it is, can full justice be done to this really wonderful zone. Let us turn our thoughts to the *modus operandi* of the intending emigrant—but I would not advise anyone to come out alone unless backed up by a fair capital, both in respect to agriculture and gold mining. It would be far and away the best plan to form companies. He would avail himself either of Alfred Booth's or the Red Cross line of steamers, both of which ply between Liverpool and Para or Manaos, it being preferable to book through to this latter inter-Amazonian port. From thence he would go up river to Iquitos by one of the Amazon Steam Navigation Company's boats. Once arrived at Iquitos our pioneer would seek an interview with the prefect of the department, who has received full instructions from Lima regarding the anticipated emigration, and he would immediately place the applicant in the right way of commencing. The maximum grant of land at his disposal is 120 hectares, equal to 296½ acres English measurement, which is ample, and in many cases more than any agriculturist would care to look after. The wood felled during the clearing would command an immediate return, and only ten weeks would elapse from the sowing of the corn and beans to the first harvest. Plantains yield fruit after ten months from the time of their being planted. One word regarding native labour. It is utterly out of the question for any emigrant to count upon native help. He must rely entirely upon his own strength in respect to everything. He alone must clear the ground, sow the land, and reap the harvest, for the few peons met with hereabouts are not sufficient for the requirements of the place. Moreover they are a lazy lot, and owing to the demand, they earn at the rate of 4s. per day.

It appears strange that no steps have yet been taken by Europeans towards colonizing this beautiful valley ; but when one reflects on the ignorance that exists regarding it, the fact calls for less surprise. Many an enterprise started under less favourable auspices has been crowned with success. I do not hesitate for one moment in recommending intending emigrants from the "Old Country" to try Loreto in preference to any of our colonies. The old travellers went not far astray in search of El Dorado. They passed and re-passed, crossed and re-crossed the cherished ground, yet failed to recognise it.

Iquitos, August 23rd, 1889.

Caucasian Photographs.—It is not perhaps generally known in England that the late Quintino Sella, the Italian statesman, was a keen climber and President of the Italian Alpine Club. (See in "Alpine Journal," vol. xi. pp. 447-9, an obituary notice written by his old friend the late Mr. John Ball.) This mountain enthusiasm has descended to his two nephews, like himself, natives of Biella, at the foot of Monte Rosa. Last summer the Signori Sella visited the Caucasus, from which Vittorio Sella, who is an admirable photographer, has brought back over a hundred photographs, many of them superb examples of the photographic art as well as of high topographic interest. First in importance, to the geographer at any rate, are the three panoramic views taken respectively from a height of 16,400 feet on the eastern peak of Elbruz, from a point in the main chain south of that mountain and near the Betsho Pass (12,400 feet), and from the summit of the Leila (13,400 feet). In the view from Elbruz the picturesque effect is greatly heightened by a shining floor of clouds, the roof of the lower world, which cover the valley of the Baksan and the distant steppe. The wavelike forms of their upper surface are curiously distinct. Above the clouds, which lie at about 9,000 feet, the main chain, with its great spurs, its lateral ranges, and its glacier basins, is spread out in the clearest detail as far as the central group. On the farther side, seen over it, lies the hollow of Suanetia. The photograph has the precision and conveys much of the information of a relief model on a great scale, such as those shown by officers of the Swiss Federal Staff in the recent Paris Exhibition. Those who have never seen a great mountain view may look on this presentment and form some accurate idea of the reality ; those who have said that there is nothing to be seen or learnt on great peaks may look at it—and repent. The second panorama is taken from a point in the chain looking eastwards. Here the twin crests of Ushba dominate a mass of wild crags and glaciers. The view from the Leila is less successful in reproducing the splendour of nature, because in the original colour plays so great a part. The sparkling white of the thousand towers of the Suanetian villages, the gold of the barley fields, the varied greens of the forests, have to be filled in from memory by the few or imagined by the many. The physical geographer may possibly be misled by the comparatively few glaciers visible into underestimating the number and extent of those on the southern side of the chain. From Adish westwards the icefields are masked by a subsidiary range of schists, which here runs closely parallel to the granite crest. Some of Signor Sella's photographs have a special personal interest, as representing the Ulluauz glen and the side of Dychtau, first attempted by Donkin and Fox. Others illustrate the scenery of both sides of the range. They are by no means limited to a succession of snow-peaks, rocks, and glaciers. Among them will be found some beautiful forest scenes in the Nakra valley, a charming glade of flowers (No. 615), together with some groups of natives (dance at Bezingi, No. 553), Suanetian shepherds (No. 654), Suanetian women (No. 644), an old Suanetian church with traces of a fresco on its walls at Mestia (No. 649), and photographs of M. Delbisheff's collection of Ossete antiquities (No. 662), a few specimens of which will be shown on the 10th February at the Royal Geographical Society's meeting. The whole collection, together with the views taken this year by Mr. Hermann Woolley, and enlargements of a few of Mr. W. F. Donkin's last views, will be shown in the Society's Map Room in the first half of February. Signor V. Sella has conferred a great boon on all lovers of mountain scenery by the production of this magnificent series, and has done much to correct and enlarge our knowledge of the chain illustrated. Messrs. Spooner, of the Strand, have at all times catalogues both of the late Mr. Donkin's and Signor Sella's Caucasian views. Applications for copies must be made through them.—D.W.F., *Proceedings of the Royal Geographical Society.*

CORRESPONDENCE.

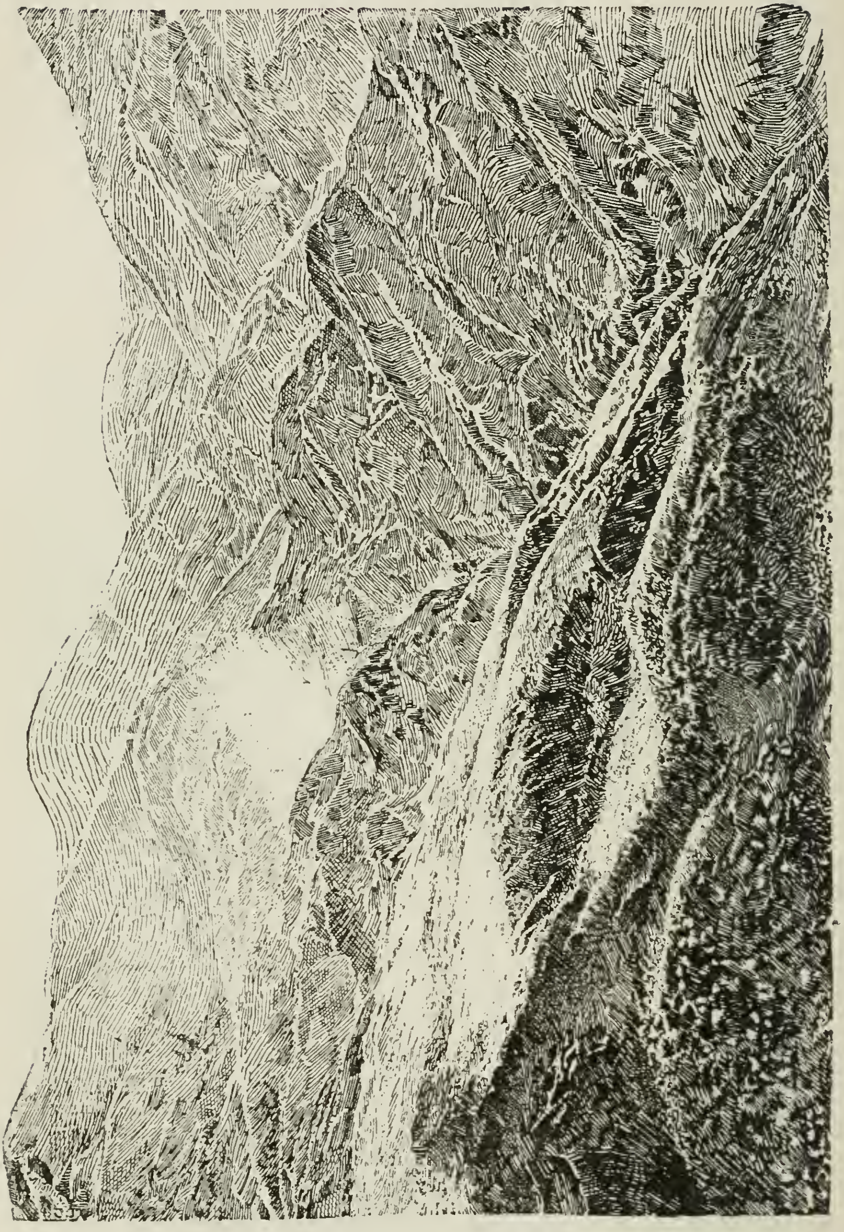
NOTES ON SULPHUR SPRINGS, NORTH END OF FORMOSA.

(See Illustration.)

By MR. JOSEPH RIPPON.

Among the mountains at the North End of Formosa frequent indication of the existence of sulphurous springs are given, to the sense of smell by fumes, and to vision by jets of steam rising from the sides of the hills to a height of thirty or forty feet in the air. On a near approach the indication is further impressed by a continual hissing and bubbling, and the odour from the heated water below is almost suffocating. There are numerous springs in this part of the island, and sulphur without end might be procured, and the value of this industry enhanced considerably. The fumes (shown by the white patch) in the illustration are visible from the plains below. At the point shown this is the only spring, and there is very little sulphur collected here; but at another depression along the Kelung Creek there are innumerable fissures and ejections from a crater of quite a quarter of a mile in circumference. Throughout this range of mountains, as far as Kelung, sulphur mines abound, and their existence is again made more plain by reason of the bleached appearance of the land within miles of their vicinity. Streams are found, deep, clear, and the water hot and fully impregnated with sulphur, which would be very valuable for curative purposes.

The peculiarity of a depression of this kind is striking. Innumerable springs abound in close proximity, some heated to boiling point, others a few feet apart quite cold. Again there are shafts sunk ten or fifteen feet deep quite dry and clear of water. These pits, when left for a time, do *not* become wells. The excavation is done in lava, and the solid sulphur exists in irregular seams of three or four inches thick. As one walks over the depression, parts are quite solid and firm, a few feet away the ground is elastic and yielding, and it needs the greatest care to keep clear of being drawn into a boiling cauldron. Bubbling and mysterious noises come from all parts of the ground, and the the clouds of suffocating steam blown by the wind calls for a great deal of presence of mind. A very short distance away from the crater are springs and streams of pure water, and the surrounding vegetation is prolific and beautiful. The sides of the mountains are covered with the tea plant and pineapples. The Formosans at work in the sulphur mines are employed by the Chinese Government. They lead the life of never-ending toil, and an existence at this weird scarred scene, miles away from the villagers in the plains, causes them to become a distinct peculiar race to themselves. They are simple, very kind and willing to pilot the "barbarian," and take as much delight as himself in the examination of the rude methods of separating—by boiling—of the foreign substances and depositing of the pure natural mineral.



Boiling Spring, North Formosa. From a Photograph supplied by Mr. Joseph Rippon.

THE ISLAND OF SAN THOMÉ AND THE WEST COAST OF AFRICA.

[Notes from Letter from Mr. J. RIPPON.]

San Thomé was discovered about the year 1470 by the Portuguese. Fifteen years afterwards it was colonised, and its prosperity was great until in 1574 the bush negroes attacked the whites, and kept up a war for nearly a century. The discovery of Brazil damaged San Thomé, and since then it has never prospered. The fact, however, of its once having enjoyed prosperity, is a reason for its prospering once again. San Thomé is 25 miles long and 18 miles broad. As we entered the bay of Anna de Chaves—the high hill, or rather mountain, in the background, the city of San Thomé, with its variously-coloured buildings spread from the fort at the extreme south, and on low-lying land to the large block of buildings on the high ground at the north point—the prospect was pleasing and very pretty, though not to be compared to Fernando Po. We landed during the afternoon, and after having passed through the Customs-house—the principal building here, as in all other Portuguese possessions—we walked down the Rua d'Algeria, and were struck at the number of ruined and deserted dwellings. The road, however, was a good one, and as we passed the native wooden shanties we noticed their clumsy style of construction. After about five minutes' walk we came to a fine stone building, with a bell tower, and expected to get the chance of seeing something of a chapel, but as we neared it we found that it was roofless and in ruins. We retraced our footsteps, and made for the Cathedral, at the other end of the town. Its appearance was very imposing from the ship. We passed the Grand Square, where a bandstand reminded us of pleasant times at home, and after crossing a bridge came upon the grand Cathedral, also roofless and windowless. We were given to understand that there were other churches to be visited, but we had no time, and had seen enough. Dotted about the mountains, in among the trees, are many farmhouses and coffee and cocoa plantations ; and I suppose it is here that the domestic slaves are at work. I noticed Levi and Bastos came off in a boat, rowed by boys from Chinchonyo, some of Theaba da Costa's slaves, perhaps, let out on hire, but, of course, I cannot say. We left San Thomé for Cape Lopez—an English trading station under the French Government—on Saturday evening, and on Sunday, after having landed, proceeded to Fernand Vaz, an English trading station at the mouth of the Ogowai, also under the French. On Monday we called at Manya, and here Messrs. Hatton and Cookson's assistant came off to see the doctor. He had been out visiting a friend of his three weeks before, and after wishing him good-night was about to proceed down the steps when they gave way, and down he came some fifteen feet, luckily, only dislocating his shoulder, or collar bone. There being no doctor for 100 or 150 miles around, he could not either go and see one or send for one, so he had borne his trial as best he could until we came along. The doctor did his best for him, but he will always be a little deformed. Mr. Myler absented himself from the table, not being well. As I had a slight touch of fever I told him the symptoms, and asked him if he felt anything like them. He said "No." I did not quite believe him, as he looked feverish. He said he was merely tired.

Tuesday.—We worked Settalama.

Wednesday.—Mayumba, both of these English trading stations are now under the French Government.

Thursday.—Still seedy, but felt ever so much better after meeting dear old Dr. Lucan, whose jolly face and strong dose of quinine soon put me nearly to rights. Myler seemed better, and came to table. Some of the missionaries from Landana and Dr. Lucan had come to Loango to welcome Pere Cairie, now Bishop of the Congo, whom they expected to arrive by us. Passing Black Point, where we only stay a short while, we arrived at Landana Friday afternoon. From Loango downwards, the natives welcomed me back amongst them, but they shouted and sang the news about here quite heartily. I went ashore and dined with Dr. and Mrs. Lucan, and was delighted to see George and baby looking so well. Poor old Pichot has been very much knocked about during my absence, having suffered from many *fatal* diseases, the last one leaving him for some time paralyzed; he is much better though, and we were delighted to see one another again.

We steamed into Cabunda Saturday afternoon, and Guest was the first old friend to greet me. We had a lot to talk about, as you may imagine. I went ashore to see the rest of my old comrades, and found all well except the agent, Mr. McCreadie, who had been and was very seedy. I sat with him until dinner, when he retired, and the evening we passed chatting and playing billiards. The public works here have not progressed rapidly during my absence, but I believe that they are awaiting the arrival of the Governor-General. I am glad to learn that the Portuguese Government have decided not to send criminals here, nor to employ criminal labour. While I was on shore the doctor and captain tried to persuade Mr. Myler, who has the fever after all, to take medicine. He will not do so, however.

Sunday.—We are now on our way to Banana. Mr. Myler is not expected to live, and we cannot do anything to help him, as he positively refuses to touch either nourishment or medicines.

Since writing above have been very busy. As a sad example of bigotry and a martyr to wrong principles, poor Mr. Myler died two days after being landed. He refused medicines and food of any sort—in fact, committed suicide, I should be tempted to say, were it not that I felt so indignant against those who promulgate those vicious doctrines among the *ignorant*, among whom we must include poor Myler.

Discovery of Petroleum in Saghalien.—In the summer of 1887 Herr Lindenbaum found a petroleum lake on a narrow tongue of land in the north of Saghalien. It is about 22 miles north-east of a village named Pomor, and at about 54° N. lat. A little south of Pomor lies Baikal Bay, a good harbour, which has a depth of eight feet at low tide, and could therefore be entered by small vessels. There would be no difficulty in making a good road from this place to the petroleum lake. There is also another spot, 125 miles south of the former, where petroleum is said to occur.—*Globus*, Bd. 56, No. xvii.—*The Scottish Geographical Magazine.*

An Expedition to the Upper Amazons.—An expedition has been despatched by the Peruvian Government to the Javary river, on the borders of Peru and Bolivia. The primary object of the expedition is a military one, being the chastisement of the Indians for the murder of white traders, but as not less than five scientific men accompany the party, some important results with regard to the topography and ethnography of the region may be expected. Among the savants is M. Richard Payer, who on returning to South America after a hurried visit to Europe was invited to join the expedition.—*Proceedings of the Royal Geographical Society.*

PROCEEDINGS OF THE SOCIETY

FROM JANUARY 1st TO MARCH 31st, 1890.

HUNDRED AND SIXTEENTH MEETING

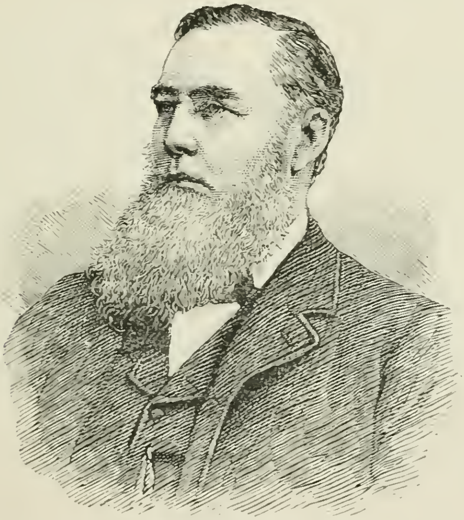
Of the Society, held in the Memorial Hall, on Wednesday, January 15, 1890, at 7-30 p.m.; Mr. R. BARKER in the chair.

Mr. H. J. MACKINDER, M.A., F.R.G.S., Reader to the University of Oxford in Geography, addressed the members "On the Necessity of Thorough Teaching in General Geography as a Preliminary to the Teaching of Commercial Geography" (see page 1).

Mr. J. J. CARDWELL also addressed the members on the subject.

The Chevalier R. FROEHLICH moved and Mr. C. H. STOTT seconded a most cordial vote of thanks to Mr. Mackinder for his eloquent and impressive address, which was carried unanimously.

Mr. MACKINDER responded.



Mr. Daniel Adamson, J.P., a Member of the Manchester Geographical Society.
Born 1818, at Shildon. Died 1890.

The death of one of the earliest and best friends of the Society, Field Marshal Lord Napier of Magdala, and of one of our most distinguished members, Mr. Daniel Adamson, having been announced, it was resolved that the Secretary be requested to tender to the families of Lord Napier of Magdala and of Mr. Adamson the heartfelt sympathy of the Society.

A vote of thanks to the Chairman closed the meeting.

HUNDRED AND SEVENTEENTH MEETING

Of the Society, at the Cheetham Town Hall, Tuesday, January 21st, 1890, at 6-30 p.m.

The members residing in Cheetham, North Manchester, and Broughton formed a committee, with Mr. S. Ogden, J.P., as chairman, and invited the other members of the Society to an "At Home." Mr. Ogden, Councillor Sherratt, Mr. M. Stirrup, F.G.S., Dr. Pankhurst, and the committee received the members, upwards of 300 being present.

Mr. J. **Gibbons Sankey**, B.A., addressed the members on the "Architecture of some of the Grecian Remains," and noted their geographical distribution.

The address was illustrated by a series of slides taken by Mr. G. A. Pingstone, F.C.S., on his recent visit to Greece.

R. M. **Pankhurst**, Esq., LL.D., moved a very hearty vote of thanks to the committee, to the chairman, to Mr. Sankey, to Mr. Pingstone, to the ladies, to the vocalists and musicians, and to all those who had enabled the Society to have so very agreeable a meeting.

The motion was seconded by the Rev. A. **Redman**, vicar of Heywood, and was carried.

Light refreshments were provided in the supper-room, and the following ladies and gentlemen provided music, &c., during the evening: Mrs. Done, Miss Methven, Miss C. Walker, Miss E. Webster, Messrs. Councillor Sherratt, C. W. Grindley, R. C. Phillips, and G. V. Webster. The following letters were read :—

"Messrs. D. Adamson and Co.,
"Dukinfield, 20th Jan., 1890.

"Dear Sir,—Mrs. Adamson desires to thank you very much for your kind letter of the 15th inst., and will be glad if you will convey to the members of your Society her sincerest thanks for the very kind resolution of sympathy passed to her in the great loss she has sustained in the loss of Mr. Daniel Adamson. The very kind words contained in the resolution she feels deeply. May we also add our thanks to hers.—We are, yours truly, (Signed) "DANIEL ADAMSON AND Co.

"Eli Sowerbutts, Esq., F.R.G.S."

The following telegram, which had been sent to Zanzibar, and Mr. H. M. Stanley's reply, were read :—

"To Stanley. Consul Euan Smith, Zanzibar.

"Manchester Geographical Society sends cordial greeting to yourself and brave companions, trusting your health may be spared.

"GREENWOOD, STEINTHAL, AND SOWERBUTTS."

The following is the reply :—

"To Geographical Society, Manchester.

"We all thank you most heartily.—STANLEY."

HUNDRED AND EIGHTEENTH MEETING

Of the Society, held in the Library, January 24, 1890, at 7-30 p.m., Mr. H. **Yule Oldham** in the chair.

A long and interesting discussion on the journey of Mr. Stanley took place. The telegram from Mr. Stanley, read at the last meeting, was also referred to with great pleasure.

A short address was given by the **Secretary** "On the Comparative Social Comforts and Position of Working People in England, France, and Belgium."

A paper by Mr. **Basil Thomson**, on "Rossel, a Cannibal Island," was read (see page 7).

Votes of thanks closed the meeting.

HUNDRED AND NINETEENTH MEETING

Of the Society, held in the Memorial Hall, February 12, 1890, at 7-30 p.m., Rev. L. C. **Casartelli**, M.A., Ph.D., in the chair.

Mr. **Mark Stirrup**, F.G.S., addressed the members on "Unknown France: the Hydrology of the Causses of Languedoc" (see p. 12). The address was illustrated by a large diagram map prepared by the Victorians, a physical map of France, specially obtained, and a beautiful collection of transparencies from M. Martel, the celebrated opener-up and explorer of the district.

Mr. S. **Ogden**, J.P., moved, and Mr. O'Connor seconded, a hearty vote of thanks to Mr. Stirrup, and expressed a hope that we might have a repetition of the address.

Mr. **Stirrup** responded, and proposed a vote of thanks to the Chairman, which was carried.

HUNDRED AND TWENTIETH MEETING

Of the Society was held by invitation at the Schiller-Anstalt, Nelson Street, Chorlton-on-Medlock, on Wednesday, February 26th, 1890, at 8 p.m., Mr. F. **Zimmern** in the chair.

The walls were decorated with a large collection of maps, charts, diagrams, and views illustrating the Congo, East Africa, and the people of Africa, and about 120 transparencies were exhibited.

Mr. R. C. **Phillips** described the Congo to Yambuya, the **Secretary** described the Route from Yambuya to Msalala, and the Rev. T. **Wakefield** described the East Country from Msalala to Bagamoyo. Some questions were asked and were replied to by the speakers.

Dr. **Ward** moved a very hearty vote of thanks to the speakers, to the committee of the club, and to the chairman, which was carried unanimously.

Mr. **Wakefield** responded on behalf of all, and the meeting closed.

HUNDRED AND TWENTY-FIRST MEETING

Of the Society, held in the Lower Mosley Street School, on Friday, February 20th, 1890, at 7-30 p.m. Mr. M. T. **Phillips** was voted into the chair.

The meeting was an experimental one, and was a very gratifying success. About 500 children were present. Nearly 150 lantern views, geographically arranged, were exhibited, with short, pithy, humorous descriptions by several members, Miss E. Webster adding to the interest with music.

Votes of thanks to all who had taken part were heartily given, and hope was expressed that in future sessions meetings of the kind might be held in other parts of the city.

HUNDRED AND TWENTY-SECOND MEETING

Of the Society, held in the Memorial Hall, March 5th, 1890, at 8 p.m., Dr. A. W. Ward, Vice-Chancellor of the Victoria University, in the chair, and on his retirement Professor W. Boyd Dawkins.

A large collection of photographs from Senor Sella, Messrs. D. W. Freshfield, H. W. Holder, M.A., and Hermann Woolley, some large maps, and a large number of lantern views were exhibited.

The Chairman said that it was his melancholy duty to mention the death of some of the friends and founders of the Society. He referred to Sir E. Baines (of Leeds), Mr. R. N. Philips, Mr. J. C. Johnson, and Mr. J. F. Hutton, one of our vice-presidents.

The Rev. S. A. Steinthal moved, and Professor Boyd Dawkins seconded, resolutions of condolence, which were adopted and ordered to be forwarded by the Secretary.

Mr. Douglas W. Freshfield, F.R.G.S., hon. sec. of the Royal Geographical Society, addressed the members "On Mountaineering and Geography. The Caucasus: its Place in History. Recent Explorations" (see page 17). The address excited unusual interest, and a large number of questions was asked.

The questions having been replied to, Mr. H. W. Holder moved and Mr. Hermann Woolley seconded a hearty vote of thanks to Mr. Freshfield, and gave some of their own experiences of mountain travel in the Caucasus.

Professor W. Boyd Dawkins moved, and Mr. Ogden seconded, a resolution that Mr. Freshfield should be elected an honorary member of the Society, which was carried by acclamation.

Mr. Freshfield responded, and the meeting closed after the members had examined the beautiful photographs.

HUNDRED AND TWENTY-THIRD MEETING

Of the Society, held in the Library, Tuesday, March 18, 1890, at 7-30 p.m., Mr. B. O'Connor in the chair.

Several letters having been read, the election of the following members was announced:—

Ordinary: Messrs. Thomas Addyman, Edward Ball, Hermann Bass, Hans Beyerlein, William Bradley, W. Clemson, Robert Fielding, William Garside, T. W. Hampson, John Heyman, H. W. Holder, M.A., Edward Hopkinson, D.Sc., Rev. F. J. Horsefield, George Howe, John Johnson, W. W. Kay, James McLoughlin, Councillor W. H. Malkin, F. Mappes, Derbyshire Mayall, F. Mehl, J. B. Midgeley, Sinclair Pearn, C. Roskill, Edward Shippey, J. J. Tinkler, Richard Wade, John Wainwright, R. Wallwork, and Joseph Watson.

Associates: Messrs. A. W. Bowker, Samuel Dyson, Moritz Frank, Rudolph Gemuseus, W. D. Pitcairn, F.R.G.S., J. Howard Reed, Joseph Slater, and Rev. E. E. Stuttard.

Honorary: Messrs. J. G. Greenwood, LL.D., and Douglas W. Freshfield, F.R.G.S.

The additions to the library having been announced, the following papers were read: "Exploration of the Owen-Stanley Range, New Guinea," by Sir W. MacGregor, K.C.M.G.; "Zambesia," by F. C. Selous; "Suppression of the Slave Trade," by Captain F. D. Lugard, D.S.O.; "The Karun River"; "The New and Beautiful Map of Madagascar," by MM. Laillet and Suberbie; a paper on "Local Geography," by Councillor J. Hardy.

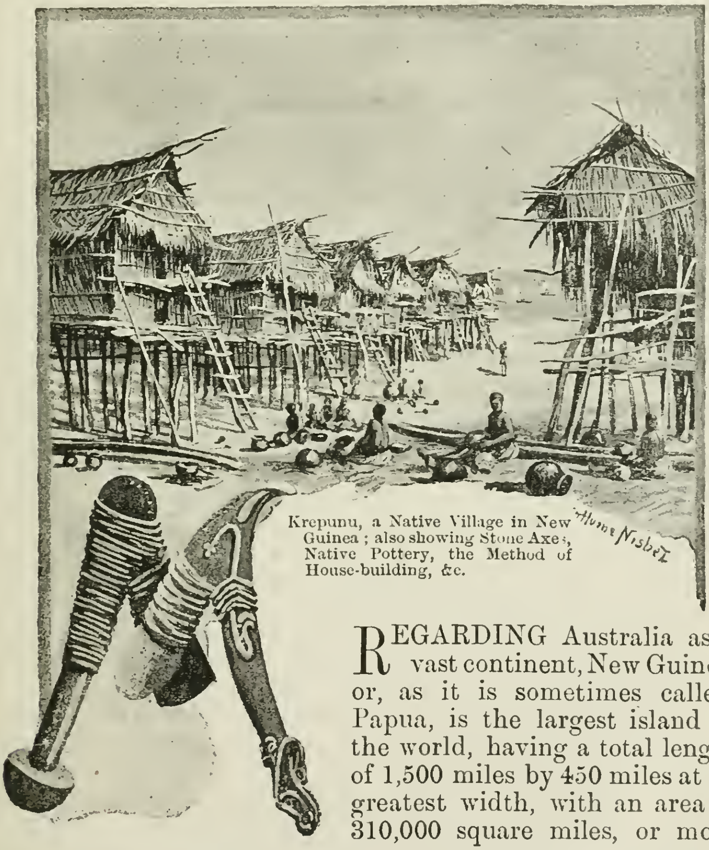
After a short discussion and votes of thanks the meeting closed.

THE JOURNAL
OF THE
MANCHESTER GEOGRAPHICAL SOCIETY.

BRITISH NEW GUINEA: ITS GEOGRAPHY AND THE MANNERS AND CUSTOMS OF THE NATIVES.*
(See Map, Vol. II., page 312.)

By W. D. PITCAIRN, F.R.G.S.

[Addressed to the Members, in the Memorial Hall, Wednesday, April 2nd, 1890.]



Krepunu, a Native Village in New Guinea; also showing Stone Axes, Native Pottery, the Method of House-building, &c.

REGARDING Australia as a vast continent, New Guinea, or, as it is sometimes called, Papua, is the largest island in the world, having a total length of 1,500 miles by 450 miles at its greatest width, with an area of 310,000 square miles, or more than twice the size of the United Kingdom. Although New Guinea is in close proximity to Queensland, being only 300 to 400 miles distant from the port of Cooktown, until within the last few years little was known about it, and even at the present time our information is very scanty. It might well be called the "Dark Continent," as no white man has as yet crossed it. The coast for a considerable distance is fairly well known, but even that knowledge is far from complete. In the year 1873, sixteen years ago, Captain Moresby, in H.M.S. Basilisk, sailed round the islands and along part of the coast, naming numerous islands after the ship and her officers. He discovered the splendid harbour of Port Moresby, or Hanuabada, on the south coast, which is at the present time the headquarters of the London Missionary Society and of the Government. He also made a flying survey, which of necessity was far from correct, but proved of great service to future surveyors.

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* The illustrations to this paper are reprinted from "Among the Canniba's," by Rev. Dr. Macfarlane, by his permission and The London Missionary Society.

In the year 1883, Sir Thomas McIlwraith, then Premier of Queensland, on behalf of his Government, annexed the whole of New Guinea, thus hoping to exclude the Germans. He had previously urged the Home Government to do this, but they remained inactive.

Upon learning what had been done, the home authorities emphatically refused to sanction it, and on their own behalf established a protectorate over the territory extending from lat. 5 to 10½ south and long. 141 to 151 east, comprising 89,000 square miles, the Germans having occupied the territory to the north, containing 71,000 square miles, whilst the Dutch territory, which lies to the north-west, and was annexed by Holland in the sixteenth century, contains 150,000 square miles, an area equal to the German and British combined.

The proclamation took place on November 6th, 1884, at Port Moresby, where the British flag was hoisted and the British men-of-war saluted.

The formal declaration was read in the following terms:—

"To all to whom these presents shall come, greeting,—Whereas it has become essential, for the lives and properties of the native inhabitants of New Guinea, and for the purpose of preventing the occupation of portions of that country by persons whose proceedings, unsanctioned by any lawful authority, might tend to injustice, strife, and bloodshed, and who, under the pretence of legitimate trade and intercourse, might endanger the liberties and possess themselves of the lands of such native inhabitants, that a British protectorate should be established over a certain portion of such country and the islands adjacent thereto: and whereas Her Majesty, having taken into her gracious consideration the urgent necessity of her protection to such inhabitants, has directed me to proclaim such protection in a formal manner at this place. Now I, James Elphinstone

Erskine, captain in the Royal Navy and commodore of the Australian station, one of Her Majesty's naval aides-de-camp, do hereby, in the name of Her Most Gracious Majesty, declare and proclaim the establishment of such protectorate over such portions of the coast and the adjacent islands as are more particularly described in the schedule hereunto annexed: and I hereby proclaim and declare that no acquisition of land, whensoever or howsoever acquired, within the limits of the protectorate hereby established will be recognised by Her Majesty; and I do hereby command and enjoin all persons whom it may concern to take notice of this proclamation."

SCHEDULE.

"All that portion of the southern shores of New Guinea commencing from the boundary of that portion of the country claimed by the Government of the Netherlands on the 141st meridian of east longitude to East Cape, with all the islands adjacent thereto south of East Cape to Kosmann Island inclusive, together with the islands in the Goschen Straits. Given on board Her Majesty's ship Nelson, at the harbour of Port Moresby, on the 6th day of November, 1884."

Sir Peter Scratchley, a distinguished military officer, was appointed special commissioner. He chartered the steamer Governor Blackall, and with a large staff visited his new district, travelling along the coast for a considerable distance, and interviewing several of the leading chiefs. His term of office was, however, fated to be a short one, as in three months after his appointment, when off Mitre Rock, which is the extreme northern boundary, he contracted the dreaded malaria, immediately ordered the steamer to return to Queensland, and the day after leaving Cooktown died on board.

The Hon. John Douglas, resident magistrate of Thursday Island, was appointed his successor, and ruled quietly and unobtrusively for three years. The country, meanwhile, was not developed in any way. The expenses of the protectorate were considerable, when, as luck would have it, a man of the name of Whyte, who was engaged on a pearl-shelling boat in the Louisiade Archipelago—which is part and parcel of British New Guinea territory—informed Mr. Douglas that he had discovered an auriferous reef on Johannet Island, showing him specimens therefrom. This conversation took place in Cooktown, Queensland, in consequence of which Mr. Douglas purchased the Juanita, a cutter of seven to nine tons burthen, provisioning it for a three months' cruise.

Mr. Whyte found eight practical miners who were willing to go with him, although they were aware that he was not a miner. The adventurous party set sail at the end of May, 1888, made a quick passage, and arrived safely at Johannet Island about the 10th of June. Whyte was asked by the diggers to point out the golden reef that he had discovered. He showed them a buck reef, by which is meant a quartz reef not carrying gold, which had never carried gold and never would. In fact, there was no trace of gold on the whole island. The outraged feelings of the diggers may be imagined. The wonder is they did not kill him. Fortunately, however, there was a larger island, seven miles distant, namely, Sud-Est. They went there, and on the second day after landing discovered traces of gold. Their spirits rose at once. They diligently followed them up, and in less than three months obtained 150 ounces of gold, of the value of £550.

Mr. Douglas had stipulated that at the end of three months the boat was to be returned to the British New Guinea Government, which was accordingly done. I saw the prospecting party on their return from Sud-Est. They reported that they had worked the field out, and that it was very patchy.

This report speedily reached Cooktown, setting it on fire, everyone believing that there were millions of ounces of the precious metal awaiting their grasp. A party of twenty-six diggers left Cooktown on August 14, 1888, in the schooner Griffin, other sailing vessels following at short intervals.

This discovery caused the home Government to create British New Guinea a British possession, which was declared on the 6th September 1888, and an administrator, now Sir William Macgregor, was appointed. A high tariff was at once imposed upon all imports, which revenue came as a godsend to the impoverished state of the New Guinea funds. On the 1st of October, when I visited the field, there were four hundred men there. Some were doing well, others making good wages, whilst many were not making "tucker;" others, again, were laid up in their tents, sick with fever. The field only lasted twelve months, during which time dozens of diggers died from malaria; and although several thousands of ounces of gold were obtained from the islands, it cost a lot of money to get them. It was all alluvial digging, from 6in. to 2ft. wash, no reef carrying gold having been found.

Sud-Est is a large island, 40 miles in length by about 8 broad. The coast runs east and west. It has high land—the principal mountain, Mount Rattlesnake, which is on the south-east, is over 3,000 feet above the sea. There are hundreds of deep gullies running north and south, with bald hills covered with good grass separating them. The gullies are very steep and well wooded. The rivers and creeks run north and south, with gullies (mostly dry) meeting them at right angles. The greater part of the gold was found on the western side of the island. Strange to say, there was no indication of any leaders or reefs bearing gold, although occasionally nuggets weighing

4oz. have been obtained. In my opinion, Sud-Est is one of the healthiest spots in New Guinea.

The discovery of this field has nevertheless proved conclusively that gold in payable quantities exists in British New Guinea. It certainly was found 150 miles away from the mainland, but, from the formation of the islands, which extend from within a few miles of it in one unbroken line as far as Sud-Est, there being only very narrow straits separating them, it is not too much to say that at one time they formed part of that mainland, and therefore it is a fair hypothesis to argue that gold must exist there in payable quantities, and merely requires tracing. There have been one or two prospecting parties for that purpose, who were badly equipped, and naturally were unsuccessful. Notwithstanding this discouragement, I see no reason to doubt that within the coming two years gold will be found in New Guinea proper, and in large quantities, but the search to be successful must be undertaken by a party fully equipped and with plenty of carriers, South Sea Islanders being the best and most reliable.

Having explained the early history of our administration of the country, let me tell you something of its inhabitants and their customs. There are three types of natives—Malay, Papuan, and Polynesian, all more or less intermixed. The estimated population is 400,000. What it is in reality it is impossible to say, as the interior is quite unknown. At the east end, or say East Cape, the natives are of a light brown colour, getting darker the further west you go, until opposite Torres Straits they are nearly as black as the aborigines of Queensland. All the men are erect as soldiers, with well developed chests and of medium height; the women, with some exceptions of course, are very good-looking, having regular features and graceful figures, and quite as adept at flirting as their white sisters. They are full of fun, and rather given to chaff.

RELIGION.

In the strict sense of the term they are without any decided form of religion, but at the same time they are most superstitious, more so even than the British were in the early days. They do not possess any temples of worship, but have wooden gods with which they decorate their houses. However, I have never seen them fall down and worship them, nor do they, as far as I know. They believe in all sorts of devils whom they must propitiate, but, strange to say, have no idea of any beneficent spirits working for their good, and if they had, they would not consider it necessary to propitiate such. When one of their tribe dies they believe that his spirit haunts his former home, and if he be a "Taubada"—a person of importance—a neat fence is erected round his (or her) grave, and quantities of yams, taro, betel-nut, and sometimes his native tomahawk and shield, are placed within the enclosure, which is held sacred or "tabu." Should he, perchance, die in Queensland, his spirit will not return to his birthplace, but will, according to their belief, be lost for ever. The natives, therefore, will be wild, and will, in all probability, kill the first white man they come across as an equivalent. I was present at several funerals or wakes, all of them being of women. When a woman dies they lay the corpse in the house, place beautiful wreaths of wild flowers on the body, the body resting on the knees of two of her nearest relatives. Her friends gather round, and they weep and wail all night long, making the darkness hideous with their groans, but some of them feeling real grief at their loss. At sunrise a canoe is in waiting, which conveys the woman's remains to her native place, which may be on an island a few miles away, where they are decently interred. Some more weeping, and all is over. Their method of going into mourning for the dead is very similar to our own. We wear black clothes, whilst they paint themselves black all over, like Christy Minstrels, so that it is difficult to recognise them, their natural colour being a nutty brown. The period of mourning generally lasts about six weeks, and it looks very comical when the mourning is getting washed out, as then they appear brown and black until they have managed to get rid of it altogether. In some parts of New Guinea the women wear a net over the shoulders and breasts as a token of mourning, but the general custom is to go into black. With all their savagery, their different customs resemble many of our civilised ones.

MARRIAGE.

They have no priests to perform the ceremony. When a man has reached a marriageable age, say twenty, he looks out for a wife. He singles out a girl to his fancy, and has invariably to wait a long time before the marriage takes place, and it is very often a difficult matter for a young man to obtain a wife. When the day of the marriage has arrived, the young couple retire to the house which has been built for them, and are thenceforth looked upon by their relatives as man and wife. They keep the marriage state as inviolate as Europeans do. Of course on their wedding-day they give a spread, consisting of yams, bananas, betel-nut, and the fatted pig, to their friends, and, let us hope, live happily ever afterwards.

As a rule, the natives have only one wife; but in some instances two. They live in villages, all the houses in a regular line, well built on blocks five to six feet off the ground, the walls and roof made of the sago palm, each leaf being put on separately and slightly overlapping one another. The floor is made of "matu," or cane, the face of the roof in the form of a triangle. They also keep the ground in front of the houses very tidy, generally sweeping it once a day. The houses are surrounded by numbers of coco-nut trees, and, by a curious law of nature, the nuts fall principally at night time. Were it otherwise, it would be very dangerous, as the coco-nut is anything but soft. The children are bright and cheerful, happier and more contented-looking than any I have ever seen. They are always at play, using the spear in sham warfare, fishing, or swimming—in fact, take all the natives, men and women, they are always joking and laughing. Life seems to them one long holiday. Their wants, which are not many, are supplied by Dame Nature. Their food, their clothing, their houses, and their weapons, as Professor Drummond, in speaking of the natives of Equatorial Africa, tersely remarks, "One stick makes him a spear, two sticks rubbed together make him a fire, fifty sticks tied together make him a house," and so it is with the natives of New Guinea. The men ply about in their large canoes carrying a big mat sail, and it is surprising how quickly they can travel and how close to the wind they can go. They think nothing of travelling 100 miles in them. The women are generally employed in the yam and taro gardens and in cooking, which appears to take up most of their time, in carrying firewood, and looking after their babies. They treat their children very kindly, which is not sufficiently reciprocated. The boys are particularly bright and quick at learning anything, some of them picking up English pretty readily, although they prefer speaking their own language. The natives trade a good deal amongst themselves, in some instances taking sago in their canoes a distance of 300 miles, bringing back in exchange yams, betel-nut, &c. All are passionately fond of chewing this nut. They take it with lime, which they make by burning coral, crushing it into a fine powder, and placing it in a gourd manufactured out of a coco-nut, and beautifully carved. They also eat with it a leaf, which is rather peppery, but pleasant to the taste. The betel-nut grows luxuriantly in some districts, whilst in others there is none. Of course the constant chewing of it blackens the teeth, which, however, is considered quite fashionable.

All the women wear a grass petticoat, sometimes two, made from the coco palm, having two shades intermixed, brown and a whitish yellow. It looks most picturesque. They also wear a black band three inches deep round the arm, and it is so tightly put on that when they wish to remove it they are obliged to cut it, leaving ugly marks in the flesh. The men wear simply a leaf of the coco palm round the loins, with leglets, armlets, and streamers or wings from the shoulders, if they wish to look extra well. They cultivate a tremendous shock of hair on their heads, combing it out and dressing it with coco-nut oil several times a day. The combs are of their own manufacture, which, after using, they stick in their hair in much the same way as ladies wear a comb. The women, as a rule, wear their hair straight and cut short, the part over the forehead a little frizzy. All the men have the lobe of the ear pierced, on the outer rim of which they string small shells, like rings, also the cartilage of the nose, through which they put a long shell, well polished and fined down to a sharp point, giving it, at a distance, the appearance of moustachios. Like the heathen Chinee, they are as beardless as boys. The men do not converse much with the women, as it would be considered unmanly. They look upon themselves as warriors, and the women as labourers. It must not be understood from this that the women are ill-treated by them. On the contrary, they have a large voice in domestic affairs, and occasionally lord it over their masters. Yes, they have not only a powerful voice in domestic affairs, but also in the affairs of State. It is often the women who incite the men to make war, or to deeds of murder, rapine, and plunder; and should they hesitate to do it, the women rush wildly into their midst, fling their arms over their heads, become very excited, and harangue them in the following fashion: "What! you call yourselves men and warriors, and yet you are afraid to do this! Out upon you, you have not the hearts of men! You are more like a pack of old women! You ought to don the grass petticoat, stop at home, and do the cooking!" And thus the men, wrought to the highest pitch of excitement, must needs obey, or quietly submit to the taunt of cowardice flung in their faces. On the other hand, occasionally, by the timely interference of the women, outrages are prevented.

I cite you these instances to show you the position held by the women in relation to the sterner sex, clearly proving that they are not treated like the degraded slaves they too often are in other savage countries. No, the women of New Guinea are determined to have their little say, and take very good care they are listened to.

The weapons used to the eastward are the spear, tomahawk, club, shield, and a small spear something like a dart. To the westward they use the spear, club, tomahawk, mancatcher, and bow and arrow. They are wonderfully expert with the latter, being dead shots at a distance of eighty yards, a much more dangerous weapon, to my mind, than the spear. The bows are very large, strong, and beautifully made.

I visited a large district to the westward, named "Aroma," where I had the pleasure of an introduction to the great chief Koepina. He can place 4,000 fighting men in the field at a few hours' notice. He is an old man, very tall and erect, with a Roman nose, austere-looking, seldom speaks, but, like the renowned parrot, is a devil to think. Strange to say, in this district and to the west of it, the men wear no clothing whatever, whilst the women wear the customary grass petticoat. All the villages here have a high palisade fence facing the sea, and extending the whole length of the beach. Koepina often makes a raid on tribes in the adjoining districts, and generally returns successful.

Dinner Island (Samarai), China Straits, and Native Vessels.

FOOD.

Their national food consists of yams (equal in taste to the best potato), taro, bananas, sago, coco-nuts, fish, birds, pig, and occasionally human beings. Of course, in some districts food is scarce, in others a superabundance. They commence digging up the yams about the end of April, and in May hold a great yam feast or festival, at which hundreds of natives are present, all the various guests contributing pigs, yams, &c. They think nothing of killing over 100 pigs in one day, and there are cartloads of yams and other food on the ground. They have a very curious method of dealing out the different parts of the pig. They cut up twine (which they make themselves) into various lengths, giving to each representative a length, each different length representing a different part of the pig, say, a holder of a short length receives the head, and so on. In fact, it is a kind of lottery—it is a question of heads or tails. All the girls are dressed in their best Sunday-go-to-meeting costume, which means a clean petticoat, with beautiful garlands of wild flowers round their heads and a necklace of beads encircling their throat. It looks lovely. The men paint their faces in the most gorgeous style, using different coloured pigments, and vieing with one another who can look the ugliest. They are also decorated with bands and streamers, and in their own opinion are dressed in the height of fashion.

After gorging themselves with food and coco-nut milk, the musicians strike up, using a tomtom—a kind of drum—and singing a New Guinea carol. The maidens dance round for hours in a ring, speeches are made by some of the leading men, and the excitement extends far into the night. A feast of this description often lasts from a week to ten days, during which time business is at a standstill, as they will not work at making copra or anything else until the feast is over. It is very similar in idea to our harvest feast in England. Should the yam season fail, which is not often, the natives suffer want, and have to live on sago and coco-nuts. Like all annual feasts, the amount of food wasted is great. There is one good quality about the yam—you can store them in a house, in which they will keep good for two years. They grow sometimes to a length of four or five feet, and weigh very heavy.

Cannibalism is still rampant in many districts, but in some places it has died out. They never eat a man who has died a natural death, only when killed. They consider human flesh far superior to pig, of which animal they have plenty; and, strange to say, cannibalism is just as rife in districts where other food is abundant as in those where it is scarce. They have no European prejudices regarding the human body, and they eat it with as good a conscience and as much gusto as we do butchers' meat. To a civilised person the idea is, of course, repugnant, but, we must remember, different countries have different customs. The natives living on the coast have acquired the habit of smoking, and very soon become inveterate at it. They would sell their souls for tobacco.

There are islands to the north of the mainland where tobacco is entirely unknown, but before many years it will reach them also. The women are not heavy smokers, and are never to be seen with a clay pipe in their mouths. They prefer smoking the bau-bau—a family pipe made out of bamboo. It is a hollow piece of wood, three or four feet long, circular, with a big hole at one end and a small hole on the top. The tobacco is rolled up in a leaf, like a cigarette, placed in the small hole, lighted, the smoke is blown into the pipe, the cigarette is then removed, the pipe is held in both hands, a couple of draws are taken, when it is handed to the next person. The cigarette is again inserted, and the process repeated. When smoking the bau-bau they seat themselves in a circle. It is always artistically carved, and is a great favourite with the women.

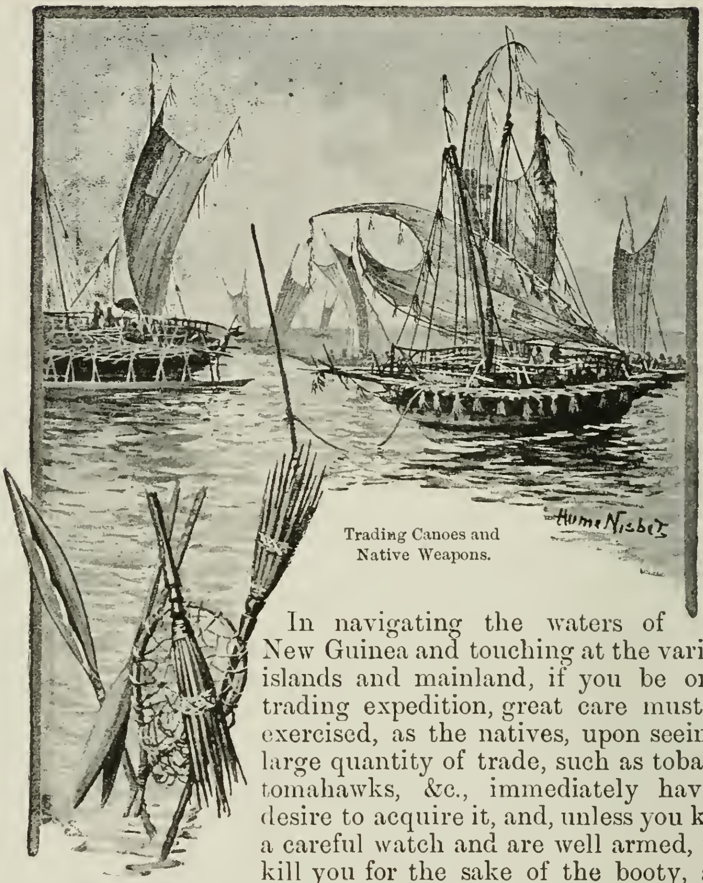
LANGUAGE.

Their language is not unlike that of the Maoris of New Zealand, and, like it, is made up of numerous dialects. When you reach the Motu district—say Port Moresby—the language decidedly changes, and differs entirely from that of the south-east or east end. It is not very difficult to acquire. If you mix with the natives, and take some interest in your task, you ought to be fairly proficient in twelve months. I am conversant with the language spoken on the south-east coast, and, therefore, will confine my remarks to that part.

Like Italian, every word ends with a vowel. The vowels a, e, i, o, u are pronounced ah, eh, e, o, oo; ai as i, au as ow, and r at the beginning of a word as l. The declension of nouns and pronouns is very simple, as for example: Man, *tau;* father, *tamada;* my father, *tamagu;* woman, *sina;* mother, *sinana;* my mother, *sinagu;* I, *yau;* you, *kowa;* me, *yau;* we, *ta.* You, when used alone, drops the last syllable *wa*, and becomes *ko* or *ku*, as follows: I go away, *yau erau;* do you go away, *kurau* (in the imperative sense); we go away, *tarau.* They have no c in their vocabulary, the letter k being used instead of it.

Their musical instruments are very primitive, but their singing is good, as they keep capital time, and, as a rule, have very fair voices. They are very fond of singing, their songs generally being an account of a canoe's journey, of how they got on, or about some fight that took place years ago, and occasionally about the only girl they ever loved.

The natives, generally speaking, are most treacherous, but are not all tarred with the same brush. The bush tribes are infinitely more savage than the coast natives, and the latter have a wholesome dread of them, as the bushmen periodically make a raid on the coast, when there is the piper to pay. The bushmen are also much dirtier and more unkempt, evidently being totally ignorant of the benefits of a bath.



Trading Canoes and Native Weapons.

In navigating the waters of New Guinea and touching at the various islands and mainland, if you be on a trading expedition, great care must be exercised, as the natives, upon seeing a large quantity of trade, such as tobacco, tomahawks, &c., immediately have a desire to acquire it, and, unless you keep a careful watch and are well armed, will kill you for the sake of the booty, and then set fire to the vessel. Many a vessel and many a white man have met that untimely fate during the last three years, amongst them several of my friends. Looking at it from a philosophical point of view, this desire on the part of the natives is but natural. How often do we, with our boasted centuries of civilisation, envy a man his wealth and riches, and if it were not for the strong arm of the law might even go to the extremity of killing him for the sake of plunder?

The coast runs as nearly as possible W.N.W. and E.S.E. It has a most bold appearance, mountains of alpine height from 9,000 to 13,000 feet rearing their heads, looking down in their awful majesty, backed by lofty ranges covered with dense scrub. The geological formation is sometimes basaltic, at other times slate, &c.

There are several magnificent rivers which carry off the great torrents of water from the mountains, notably the Fly, which is navigable for 500 miles from the coast; the Baxter, San Joseph, Aird, and Tait.

ANIMALS, ETC.

There are no wild animals in the strict sense of the term, the principal ones being the wild hog, cassowary, wallaby, tree kangaroo, cuscus, opossum, and alligators. Snakes are to be found, but are not so numerous as in Queensland. There are numbers of beautifully plumaged birds—the bird of paradise, of which there are many varieties, whose haunt is the tallest trees on the hills, and only met with on the mainland; forty or fifty varieties of pigeons, many of them of lovely hues; scrub hens, parrots and cockatoos, and the flying fox, which, when young, is capital eating.

THE CLIMATE.

The climate is very unhealthy, the tropical scrub being a harbinger of malignant fevers, malaria, &c., and it will take years of cultivation before it alters for the better. The natives, even, are subject to the fever, but in a milder form. The prevailing wind, which blows from the south-east, lasts for eight months, from April to November inclusive, when it veers to the north-west. The rainfall is heavy, especially at the eastern end, where there is no decided wet season, unlike Port Moresby, which has its annual rains in the months of January, February, and March, the remainder of the year being very dry, so much so that nothing will grow there, not even a yam.

PRODUCTS.

The chief products of the country are mother-o'-pearl shell, bêche-de-mer, and copra. The pearl shell is found in 20 fathoms of water, and is obtained by divers in a diving dress. The boats used for the purpose are small luggers from 8 to 15 tons register. The pump is worked by natives, and the crew consists of the diver, who acts as skipper, and a couple of South Sea Islanders or Malays. Great risk is incurred by the diver, the pressure from the depth of water nearly always producing paralysis and often death. The value of the shell in the London market, which has to be cleaned, scraped, and packed in cases previous to shipping, varies from £90 to £160 a ton, according to quality. It takes 600 shells to make a ton, and valuable pearls are occasionally found in the shells, in the belly of the fish, which is a gelatinous-looking subject like a jellyfish. The pearl is produced by disease of the shell, and is only found in grubby, worm-eaten ones. Pearl shelling in New Guinea is pretty well worked out, as no new patches have been found for some months.

The bêche-de-mer is a kind of sea slug found on the reefs in a few feet of water. There are about ten different species, differing greatly in value, some being worth £20 a ton, whilst the best, viz., teat, is of the value of £100 to £130 at the nearest Queensland port (Cooktown). The whole of it is purchased by Chinese merchants, and immediately shipped to Hongkong, where it is eventually retailed out at a very high figure. It is most nutritious and makes capital soup. The Chinese are passionately fond of it, and are the principal consumers. The method of obtaining it is to go with two or three boats full of natives to a large reef, choosing fine calm weather, when the natives dive for them. You then erect your smoke-house on shore, or, if the vessel be large enough, on board, get your boilers and boil your fish well. Your smoke-house should have three separate layers or slides, taking care to keep a good fire on, changing your fish from one slide to the other. The whole operation takes about three days. You then refill your boilers, and proceed in like manner. The fish should then be thoroughly cured. You now bag it in cornsacks, and previous to shipping capsize the bags, dry the fish in the sun, sort the various species and qualities, rebag them accordingly, and send them away.

Copra is made from old coco-nuts only. The husks are removed and thrown away as rubbish; the shells are then placed in a smoke-house and kiln-dried, or, when possible, sun-dried. The nuts are smashed up and then bagged. It takes about 7,000 nuts to make a ton, and the value in the London market is only £13 to £14 for kiln-dried, and £14 to £15 for sun-dried. Many natives are employed in this industry—the work always being done on shore, for which they are paid in trade. Of course, in these undertakings, you are always in a certain amount of danger from the hostile acts of the natives, but, as I said before, you have to exercise caution, and not give them a chance.

The soil and climate of New Guinea are well adapted for the cultivation of coffee, indigo, indiarubber, cotton, sugar, rice, tobacco, sago, &c. The natives have plantations of sugar-cane, which seem to thrive very well. They do not manufacture sugar from it, but simply chew the cane. They, however, manufacture sago, of which they are very fond. Oranges and lemons grow to perfection. There is a plantation of them at Su-au (South Cape), also on Teste Island. This industry, if undertaken by Europeans on a large scale, would, I have no doubt, pay handsomely.

Unlike Australia, New Guinea is never subject to periodical drought, and when it becomes better known British capital will be introduced, industries will spring up, and the country will eventually be developed and become the home of many of our fellow-countrymen.

NOTES ON THE RECENT DEVELOPMENT, EXPLORATIONS, AND COMMERCIAL GEOGRAPHY OF BRITISH NORTH BORNEO.

By Mr. A. COOK, of Sandakan, British North Borneo.

[Read to the Members in the Library, Tuesday, May 20, 1890.]

THE state of North Borneo, or British North Borneo, to which this paper refers, comprises the whole of the northern part of the island of Borneo, from Sipitong, on the west coast, in about lat. 5° N., to Sibucco on the east coast, in about lat. 4° N., and all the numerous islands around the coast. The coast line is about 1,000 miles, and the area is about 31,000 square miles. Thus we have a territory considerably larger than Ceylon, and nearly as large as Ireland.

The geographical position of North Borneo will be better understood by referring to a general chart. It will be seen that the island, which, next to Australia, is the largest in the world, lies about midway between the Straits Settlements, the Philippine Islands, China, and Australia, and that the northern part is on the direct tract of vessels trading between Australia and the countries named. This fact alone renders the possession of North Borneo of great importance to this country. Until 1888 this possession only meant that the country was owned and governed by a chartered company styled "The British North Borneo Company;" but Her Majesty's Government has now seen fit to declare a British protectorate over not only North Borneo, now called the State of North Borneo, but also over the territories of the Sultan of Brunei and the Rajah of Sarāwak, extending as far south as Tanjong-Datu, and thus accomplishing in one year the hope that has been entertained for centuries, viz., that British influence and commerce should be encouraged, protected, and developed in Borneo. The remaining portion of the island is under the influence of Holland.

Several very able reports and papers have been written since 1878, when the territory was ceded by the Sultans of Brunei and Sulu to Mr. Alfred Dent (now Sir Alfred Dent, K.C.M.G.) and Baron von Overbeck. In 1886 the country was well represented at the Colonial and Indian Exhibition held in London, and a handbook compiled from the various reports received from all sources, with an introductory paper by Sir Rutherford

Alcock, K.C.B., D.C.L., Executive Commissioner for British North Borneo, and Chairman of the British North Borneo Company, gives the best information as to the modern history, acquisition, geography, population, climate, trade, laws, and form of government of the country, with a copy of the royal charter granted to the British North Borneo Company. A new edition of the handbook is, I understand, in the press, and will shortly be issued. As time and the country progress, later and fuller information is needed, and everyone taking an interest in the development of the young colony will be able to secure a copy.

This paper is intended to show the more recent developments, exploration, and commercial geography of the country under the company's government. I wish to draw attention to the words, "company's government," because many people are under the erroneous impression that the British North Borneo Company is a trading concern, taking out large shipments of British goods, which they barter or sell to the natives of Borneo in exchange for the products of the country, following the example of the East Indian Company. The royal charter certainly gives power "to deal in merchandise, or carry on any lawful commerce, trade, or dealing whatever, in connection with any of the objects of the company;" but the main object is to civilise and govern, and the company has wisely confined its operations to this main object, and to attracting others to trade with and develop the resources of the country. It is scarcely reasonable to suppose that an enterprise like this could succeed in attracting capitalists and traders, if the government of the country at the same time competed with the capitalists and traders in their business. Although the cession dates from 1877-8, it was not until November, 1881, that the royal charter, incorporating the British North Borneo Company, was obtained, and not until the 1st of July, 1882, that the country was transferred to that company, by the provisional association formed by the founder, or original grantee already referred to. Considerable progress had already been made in forming the Government of the country under Mr. William Hood Treacher, the first governor, a gentleman fortunately well known to the natives as acting governor of Labuan, and acting consul-general for Borneo. There had already been formed the necessary establishments of officers, including a treasurer-general, residents, collectors, commissioner of lands, superintendent of public works, harbour and post master; medical, judicial, agricultural, gaol, scientific, and exploring departments, with an armed constabulary composed of Sikhs from India and Dyaks and Malays of Borneo. Stations had been opened at Sandakan, in Sandakan Bay; at Kudat, in Marudu Bay; at Silam, in Darvel Bay; at Abai, in Abai Bay; and on the Kinabatangan, Papar, and Kimanis rivers. A friendly intercourse had been begun with the inhabitants of the coast and interior—in fact, a government had been firmly established and adopted by the natives.

The trade at this time (for 1881) amounted to $160,650 in imports, consisting chiefly of brass-ware, building materials, cloth, earthenware, furniture, oil, live stock, opium, provisions, rice, salt, spirits, sugar, tobacco, and sundries. The exports amounted to $145,444, consisting of beeswax, birds' nests, camphor, damar, fish, guttapercha, indiarubber, live stock, opium, sago, seed-pearls, sharks' fins, shells, timber, trepang (a *bêche-de-mer*), and tobacco. At the same time the sources of revenue were a farm for the collection of the revenue on opium, tobacco, spirits, and pawnbroking; an import duty on brass-ware; an export duty on all jungle produce, including birds' nests, a house assessment, court fees, poll or head tax, inland passes, land rents and land registration, postal revenue, and profit on copper coins; from all sources the revenue for 1881 only amounted to $20,208.

The population was estimated at 150,000, made up of Malays Bajows, Sulus, and about 3,000 Chinese on the coast, with Dusuns, Idāāns, Muruts, Peluans, Buludupies, and other tribes of the interior. The provisional association had devoted considerable attention to the exploration of the territory and its resources. The Kinabatangan river, the largest and longest in the territory, had been explored by Mr. W. B. Pryer (the first resident). In 1881 Mr. Witti had traversed the country from Marudu Bay to Papar, and from Marudu Bay to Sandakan Bay; and it was in July, 1882, that this able and fearless explorer was treacherously murdered by natives, in the interior, on the Sambakong river, while prosecuting an exploring journey from the west to the east coast of Borneo. Mr. Frank Hatton, the company's scientific explorer, was at the same time in the interior. He had tested the oil-springs of Sequati, explored the country from Sandakan viâ Labok, to Marudu Bay; the Bongan and Kinoram rivers and Timbayuking mountains. It was in 1883 that he started with his assistant, Mr. Beveridge, to explore the Kinabatangan river for minerals. He ascended some distance beyond Penungah, from whence he retraced his steps and proceeded to explore the Segama river, reported to contain gold. The 1st of March, 1883, will long be remembered as one of the saddest in Borneo, for on this day the company's most promising scientific officer met his death by the accidental explosion of his own gun, while returning from hunting an elephant he had wounded. The superintendent of agriculture, Mr. Von Donop, had not been idle. An experimental garden had been begun at Silam, with the object of giving a fair trial to the tropical products most likely to suit North Borneo, and Mr. Von Donop himself had, in 1882, made several journeys into the interior to examine the soil. Meteorological observations were established at each station, and in every possible way the country prepared to show the planter and capitalist what it could produce.

The valuable edible birds'-nest caves of Gomanton, Madai, and Segalong, a cause of jealousy and contention amongst the natives of these districts, did not escape the provisional association, who sent Mr. Bampfylde to Gomanton to report on the out-turn, and also on the deposits of guano. The results of these various explorations and undertakings were made known at the time in printed pamphlets, which are still available at the company's office. In 1882 communication with Singapore (600 miles distant) was kept up by two small steamers, which made a trip about once a month. As yet nothing had been done to open communication with Hong-Kong and China, or to introduce Chinese labour into the country.

The *British North Borneo Herald and Government Gazette* was first issued in 1883, and it may be said that with the issue of this paper began the progress and development of the country; for, although prospecting for minerals and explorations had been energetically continued during the two preceding years, there had been no practical result, although specimens of copper, silver, and coal had been discovered, and numerous reports received of gold in the Segama and Kinabatangan rivers, and in the district of Silam. No mining, planting, or other company had yet been formed. It had, however, been proved beyond all doubt that the climate and soil of North Borneo was eminently suitable for tropical products, such as coffee, pepper, sago, cocoa, sugar, tapioca, fruits, cardamoms, and other spices, so as to give sufficient promise for the future. Tobacco of an excellent quality was found grown by almost all the natives of the interior, and this at once raised the hope that North Borneo might become a great tobacco-growing country. Almost the whole territory was found to be covered with immense jungles or forests of valuable timber, while the jungle products, such as rattans, guttapercha, indiarubber, beeswax, gum damar, edible birds'-nests, &c., were of great value, and an increasing source of revenue if properly looked after.

In 1883 the first planting company in North Borneo was formed, under the title of the Chinese Sabah Land Farming Company, which began operations in shipping timber and in planting tobacco in Sandakan Bay. In 1884-85 they produced a crop of some 400 bales, samples of which were submitted to experts, and elicited the following reports:—

> "I have the pleasure of informing you that the sample of Borneo tobacco you were kind enough to show me, and to let me test, is first-class, and in my opinion would, judiciously handled, readily be adopted by all cigar manufacturers in England and America as a perfect substitute for Sumatra leaf. I have no hesitation in saying that, with a little more care being taken in fermenting it, this tobacco should realise from 3s. to 4s. per lb. in first quality brown wrappers."—*Extract from Messrs. Salmon and Gluckstein's letter, dated 4th June, 1886.*

"Although we have seen as yet very little of North Borneo tobacco, and that in an unfermented state, we come to the conclusion that the tobacco is fully equal to Sumatra, and may later on be even better than Sumatra; it will be the tobacco of the future."—*Extract from Messrs. Westerveld and Co.'s letter, dated 15th June, 1886.*

"Since writing the above, we have sent up to the Colonial Exhibition and been favoured with a type of the tobacco; judging therefrom, and making all allowances for the fermentation not being settled, we have not the slightest doubt in asserting that the characteristics are most satisfactory as compared with those of the growth of Sumatra; the leaves are occasionally rather thick and the veins somewhat prominent; the sorting should have more attention; but all these faults can be remedied with care. The great point is, judging from the type we have seen, we can pronounce the growth a genuine cigar tobacco growth, and with more care will prove a most formidable rival to Sumatra."—*Extract from Messrs. H. N. Davis and Co.'s letter, dated 2nd July, 1886.*

At a meeting of tobacco brokers and others interested in the trade, held in the Conference Hall of the Colonial and Indian Exhibition on 6th August, 1886, under the auspices of the London Chamber of Commerce, the samples of British North Borneo tobacco were exhibited with others; and a report upon them has been made by Mr. C. A. Muller, of the firm of Messrs. Westerveld and Co. This gentleman having been for more than fifteen years largely interested in the culture of Sumatra tobacco, and thereby acquired an extensive and practical knowledge of its management as regards planting, importing, and sale, may be considered a competent authority on the subject, and his report is as follows:—

"The tobacco grown on the Suanlambah estate, North Borneo, as exhibited in the Colonial and Indian Exhibition, although not fully cured, promises to become a formidable rival to Sumatra, as soon as large quantities can be produced. The North Borneo tobacco is almost in every respect equal to the Sumatra growth, and certainly superior to that grown in Sirdang and in some parts of the Lankat district. It ranks with the Delhi tobacco, which is acknowledged to be the finest grown in Sumatra. The leaf of the North Borneo tobacco from the Suanlambah estate is full grown, healthy, strong, and elastic, broad and well feathered. The colour is good ripe brown; a large proportion is the rich dark brown, so much liked in England and America; and a fair quantity also of the light brown colour, so suitable for the German market. When this tobacco has undergone a full and careful fermentation, the colours will greatly improve, they will become more level, and lose the mottled appearance of the not fully fermented leaf. Then they will undoubtedly make very handsome cigars, and possess also the gloss so much liked in Delhi tobacco.

"The burning is very fair, although, as is well known, fresh, soft, imperfectly fermented types will at first not burn so white as those properly fermented. This is the case with almost all cigar tobaccos, Sumatra not excepted; and I have not the slightest doubt that the burning of the Suanlambah tobacco, after a careful and full fermentation, and if it has not been cut in an unripe state, will be found equally as good as the best Sumatra.

"The flavour and taste are, in my opinion, not inferior to Sumatra, and will also much improve after a full and good fermentation.

"The productiveness of this tobacco is great; one pound English weight of that shown in the Colonial and Indian Exhibition has produced or covered nearly 500 good middle-sized cigars. Thus 2lb., or say even 2½lb., to make sure, would cover 1,000 cigars. Now every man in the cigar-tobacco trade must admit that such productiveness is fully equal to that of Sumatra.

"On the whole, so far as we are at present acquainted with the North Borneo tobacco grown on the Suanlambah estate, it promises to become in all respects—texture, colour, burning, flavour, taste, and productiveness—equal to the best Sumatra tobacco; and considering that Sumatra tobacco has reached its zenith, and that a large proportion of the virgin soil, after nearly 20 years' standing, has been absorbed, North Borneo has a brilliant future, the more so as the Sumatra tobacco seems to get inferior from year to year, owing partly to the now limited area of virgin soil and partly to the enormously high dividends which Sumatra companies and planters made of late years, in consequence of which they all plant for quantity and not for quality, while the sorting has been sadly neglected. For those reasons, but more so on account of the extremely high prices which must be paid by second hands, not only the German, American, and English, but even the Dutch dealers (second hands) would gladly welcome in North Borneo tobacco a new rival. Mr. Harkema, a well-known Amsterdam broker, in his speech, expressed himself in the same way, and was full of praise of the North Borneo tobacco which he saw in the Conference Hall of the Colonial and Indian Exhibition. Messrs. P. Veerkamp Van Embden and Zoonen, also well-known Rotterdam tobacco brokers, who received a small type of the Suanlambah estate tobacco, have a very good opinion of it, and believe that North Borneo has a brilliant future, if it produces tobacco like that shown in the Exhibition.

"Messrs. B. Morris and Sons, of London, an old and first-class firm of cigar manufacturers, state that the productiveness of the Suanlambah tobacco, of which they received a sample, is on a par with the first Sumatra leaf of average crop."

Unfortunately their capital was not sufficient to enable them to carry on and reap the reward which their first crop promised. But the work of this pioneer company was being carefully watched by others. The Count Geloes d'Elsloo applied for and secured a large area of the finest tobacco land in Marudu Bay, and in 1887 planted his first crop, which in every way satisfied the hopes and expectations of himself and his friends—so much so, that he had no difficulty in forming the London-Borneo Tobacco Company, with a capital of £100,000. The Baron von Stein was the next to open a tobacco-planting estate in Darvel Bay. Others soon followed, and at the present moment some twenty companies are opening tobacco estates in Marudu Bay, Sandakan Bay, Darvel Bay, Kinabatangan, Labuk, Sugut, and Segama rivers, while additional concessions are being applied for in almost every bay and river in North Borneo. The nationality of these companies is a striking proof of the success of the tobacco enterprise, and the confidence reposed in the administration. Eight of them are Dutch, or formed by Dutch gentlemen from Sumatra, Java, and Holland; one is German, and the remainder are English companies, formed in London and Hong-Kong. The estates vary in size from 10,000 to 40,000 acres. This will give some idea of the number of acres being brought under cultivation. The tobacco grown in North Borneo is the fine quality used for covering cigars; and it may be mentioned that the prize recently offered by the London Chamber of Commerce for the best sample of tobacco grown in any British colony was equally divided between British North Borneo and Jamaica, the former for superiority in market value, and the latter for superior smoking qualities. This tobacco from North Borneo was grown in Marudu Bay, on Count Geloes' estate of Ranow.

Several of the companies farmed also plant coffee and pepper. In timber a large trade is in prospect. The British Borneo Trading and Planting Company and the China-Borneo Company have erected extensive steam sawmills in Sandakan Bay, and carry on a large export trade in rough and sawn timber. This is sent to China, Singapore, and England. Steps are also being taken to open a trade with the Australian colonies, where samples of North Borneo timbers and products have been exhibited with such success as to obtain a gold medal at the Adelaide Jubilee Exhibition held in 1887.

The sugarcane grows so luxuriantly as to attract the attention of the Dutch sugar planters in Java, who find it advisable, on account of some disease in the canes grown there, to look elsewhere for a new stock. Already land has been applied for with a view to growing and exporting sugar tops to be planted in Java. This points to important results for the future, as it is reasonable to conjecture that, if North Borneo can supply sugar tops or plants for transportation to Java, the growing of canes for manufacturing into sugar on the spot is only a question of the necessary enterprise and capital. There is no doubt as to the capability of the soil, situation, and climate, or of the quantity available.

Tapioca is another product which is successfully grown in North Borneo. Every native who owns a house possesses a small patch. Tapioca planting is a favourite industry with the Chinese, the reason, no doubt, being the quick return given for the money invested, as the cuttings are planted and the crops secured in about eight months, almost as quickly as tobacco, if the time required for fermenting the latter be taken into consideration. Sago growing and manufacturing is also an important industry, but as yet it is only in the southern provinces that it is produced in sufficient quantities for exportation. This palm is indigenous to Borneo. The natives are being encouraged to grow it wherever the soil is available. It requires wet flat soil, and seems to flourish best in the fresh water swamps and wet plains, just beyond the tidal limit. The natives are also encouraged to grow coffee, pepper, cocoa, and fruit trees—a constant supply of these is issued free to them from the Government Experimental Gardens at Silam. In short, they are being taught to give up placing their trust for the future in jungle produce, which must disappear as the land is taken up for cultivation.

Gambier and indigo are found growing wild in many parts of the country, and before many years we may expect to see large and profitable estates of these industries.

So much has been done to develop the agricultural resources of the country. In other directions the company has not been idle.

The seas around North Borneo have long been famed for their valuable produce. Up till 1883 little had been done to discover or develop it, but within the last two or three years laws and regulations have been framed and issued for its protection. Seed-pearl oysters have been discovered and are worked under Government supervision in Padas Bay, Marudu Bay, Sandakan Bay, Linkabo in Labuk Bay, and at the entrance to the Maroap river. The mother-of-pearl oysters are found in Marudu Bay and the seas around Darvel Bay and Omadal on the east coast. Edible oysters are also found on the rocks near the coast. These are collected and dried by the natives and sold to the Chinese traders, who export them to China. The same oyster does not object to make its home on the mangrove branches between high and low water—in fact, oysters may be said to grow on trees.

Keemah or clams are also collected, dried, and exported in the same way. Turtle eggs are found on many of the sandy beaches of the islands around the coast. These are now farmed out to the natives, who collect and bring them to market in the proper season. Shark-fins and seaweed (agar-agar) are collected, dried, and sold as usual. Although some progress has been made in discovering and conserving the sea products named, there yet remains much to be done in this direction. I have remarked that the sea products are collected and brought in by the natives. These natives are the Bajows of North Borneo, a wild-looking gipsy race—in short, a remnant of the former pirates who haunted the coast. They still look upon the sea and its produce as their own, nor are they disturbed in this belief, but the Government arranges to guide and assist them in conserving it. So well has this been done, that these people, who can muster about 5,000, come and ask advice about the most simple matters. They are the reserve navy of North Borneo, and are divided into several fleets, with their admirals, commodores, and captains, just as we find in more civilised countries. It is no uncommon sight to see from twenty to forty sail entering or leaving Sandakan, Marudu, or Darvel Bay.

The edible birds'-nest caves are worked under Government regulations. They are let yearly to the natives, who had, and have, the best right to collect the nests. The result is most satisfactory to themselves and to Government.

The guano deposits formed in the caves in North Borneo have not yet been worked, but these will doubtless be utilised by the numerous tobacco and other estates in the future.

The minerals of North Borneo have long been reported as gold, diamonds, silver, lead, tin, copper, antimony, cinnabar, coal, iron, and mineral oils. Since the unfortunate death of the scientific explorer, Mr. Frank Hatton, Government rewards have been offered to natives and others for the discovery of any valuable or useful mineral. Captain R. D. Beeston was the first European to discover gold in 1883 in the Segama river. Nothing, however, was done until 1884, when some natives brought a small quantity from the same river. Mr. Henry Walker, commissioner of lands, was despatched to confirm the find. He not only did so, but, proceeding with great difficulty far into the interior, found gold in many places in valuable quantities. After this, small parties of natives and Chinese ventured to go in search of gold; but, although they found gold sufficient to repay them, the distance from any station or food supply (the nearest being Silam or Sandakan) was so great as to discourage them. Early in 1886 Captain Beeston started on another journey to explore the Segama. His reports of May, 1886, are referred to in the company's handbook, where it is stated—

> "He found the country just below Pula Kawak highly auriferous and covering a large area. Above the Pula Kawak all the beaches hereabout contain gold, and all would pay to work systematically. Above the Bole, a tributary of the Segama, the whole of the Segama river is one endless chain of payable beaches, some richer than others, but invariably the gold is coarse."

Speaking of the tributaries, Captain Beeston reports—

> "That on the Bole Besar four Chinese with a cradle got gold worth $17.20 or $4.30 per man for the day's work. The Malays were equally successful with their wooden dishes. At Rocky Creek, another tributary of the Segama, gold exists both in the banks and in the river bed. Alligator Creek has payable gold at its mouth."

He concludes by saying—

> "That payable, and in some cases highly remunerative, diggings exist in the main Segama from the Dusun Kampong to the highest point reached; and that in addition five streams reported on separately contain gold in large quantities. The source of the Segama, I think, is in the hills between Silam and Madai, and the inference is that the hills in this locality contain the material from whence the gold is washed down the main Segama, and that the hills thereabout, most probably, almost to a certainty, contain rich quartz reefs."

In 1888 Captain Beeston made another expedition to the interior of the Segama. This time he was accompanied by Mr. Sefton, a well-known and successful Australian explorer, Mr. Allard, on behalf of his company (the British Borneo Gold Mining Company), and a Mr. Amos on private account. The party successfully reached the highest point, where the Segama is a mere stream. They encountered many rapids, over which they had to haul their canoes before reaching this point, and now they had to wait for provisions expected in a few days by a party sent back to Etok-Batu Store. The few days stretched out to thirteen, and during the greater part of the time the party had nothing to subsist on beyond a few fish and a moose-deer, which their dog Joe had managed to capture. "Poor Joe" only saved himself from being eaten by his starved appearance. The explorers were now too weak to proceed, and had to return to Silam, which they had just managed to reach. Although this party was not successful in discovering the matrix, or quartz reef, or source of the gold, they confirmed all previous reports as to payable gold in the river beds, banks, and beaches, and gave hopes of remunerative employment to a large population in the near future. The white digger is not encouraged: the climate is not suited to the white man working out of doors, even in the shady jungle. He could not move about, or travel, or feed himself as he could do in Australia, and the probability is that he would either lose his health or become disappointed. To the native or Chinese labourer there is every encouragement: boating and jungle travelling does not enervate them as it does the white man. On the Segama there is room for thousands of both. The present difficulty is the want of a road to the interior. Mr. S. B. J. Skertchly, managing director of the British Borneo Gold Mining Company, who have large mining concessions on the Segama, has endeavoured to solve this difficulty by personally examining the country and tracing the road from the river Tinkayu in Darvel Bay to the Segama. The distance will be about 30 miles, and the Government are now taking measures for making a road over Mr. Skertchly's track. This will bring the gold miner and digger on the Segama within two or three days' distance from the Government station of Silam. Mr. Skertchly and his assistant, Mr. Allard, having reached the Segama, soon satisfied themselves as to the existence or non-existence of payable gold, and the result is that the company which he represents are preparing to operate on an extensive scale.

Within the present year concessions for dredging for gold in the Segama river have also been granted by the Government to a London company. In Borneo the Government is encouraging and assisting respectable parties of Chinese to settle in the district. Samples of stream tin, copper, galena, cinnabar, and diamonds have often been brought in by natives, and the hope is entertained that the reward offered by Government for a payable find will soon have some practical results.

The southern province, which was acquired from the Sultan of Brunei in 1885, contains a valuable seam of coal. This valuable mineral also crops out in several other localities, including Marudu and Sandakan Bays, and will probably be worked before long, as application has been made by a syndicate for a coal prospecting concession in Sandakan Bay and district. The Central Borneo Company, a large company recently formed in London, having also mining concessions in several other districts, and have a prospecting staff at work.

In granting prospecting concessions, the Government of the country adopt the surest means of discovering its mineral wealth.

The exploration of the Padas river, in the latest acquired southern province, has been ably performed by Mr. D. D. Daly, late acting resident of the West Coast District. This river is rich in sago, and has a large population of Besayahs, Muruts, and Peluans, who live on its banks and in the interior. The river has two branches, which rise about the centre of Borneo, where the inhabitants are Muruts and Peluans, who plant paddy, sugarcane, and tapioca sufficient for their own wants. They also collect jungle produce, such as guttapercha and indiarubber, beeswax, nests, &c., which is brought to market on the Padas river, and bartered or sold to Chinese or native traders. Mr. Daly has added much to the geography of the country by his reports and maps on the Padas and Kinabatangan rivers. His sudden death from fever in June last causes a great loss to the company and to science.

The British North Borneo Company has not arrived at this stage without encountering difficulties. Blood-feuds between the tribes in the interior had to be dealt with, and sometimes it was found necessary to punish them.

For administrative purposes the territory of British North Borneo is divided into nine provinces, as will be seen in the map. They are named in honour of the gentlemen who made the company, and who are now its directors.

The form of government as described in the handbook is distinctly British, following that of British colonies, particularly India, a country and climate not unlike Borneo. The Indian Civil and Penal Codes and Evidence Act are followed; land, harbour, customs, gaol, partnership, postal, and other laws and regulations are in force. Local ordinances are made as required. The company has a copper coinage and note issue of its own; its treasury at Sandakan, the capital town, and at the principal stations, performs all the functions of a bank; and it does money-order business with almost all civilised countries. One of the Eastern banks (the Hong-Kong and Shanghai Banking Corporation) has recently opened a branch in Sandakan, but as yet the requirements of the country are hardly met as regards banking.

The condition of the native races in North Borneo has been greatly improved. The piracy and enforced slavery, once the curse of the country, has been abolished. The company has faithfully carried out the terms of its charter, and have not only discouraged slavery, but have rendered the country practically free of this hindrance to civilisation.

The religion of the natives is not only respected, but those who profess any, such as Mohammedanism, are protected. At Sandakan a mosque has been built, and in each district a paid priest is appointed, who attends to their religious wants, marriage rites, and customs. A law provides for the registration of all births, marriages, and deaths. The Chinese also have their churches or joss houses, and under the law follow their own religion. At Sandakan there is an English school and church. The clergyman is appointed by the Society for the Propagation of the Gospel, and maintained by it and the Protestant community. A branch has been opened at Kudat in Marudu Bay, and is largely attended by Chinese. There is also a Roman Catholic Mission, with headquarters at Sandakan. This mission has several priests throughout the territory, and the schools which they have established are well attended.

Immigration and the supply of labour to North Borneo is perhaps the most important question of the moment. The agricultural resources of any country cannot be successfully developed without a constant supply of cheap and good labour. In this Borneo is more fortunate that most tropical countries. Her population, though very independent and poor agriculturists, are experts at boating, felling the jungle, making rough houses, palm-leaf roofing, and mats. They will work, and even dig, for strangers or foreigners if properly treated. China must, however, be looked to as the permanent source of supply. The distance from North Borneo is only 1,200 miles. Every encouragement is given to Chinese agriculturists to come to North Borneo and make it their home. Many have taken advantage of the favourable terms offered by Government, and the nucleus of permanent settlements has been begun in several parts of the country.

Steam communication has been opened with Hong-Kong, and two steamers are engaged in supplying the labour requirements of the estates and country. Six other steamers bring coolies and provisions from Singapore, and take back the produce of the country. Several sailing vessels are engaged in carrying timber to China, while about twenty steam launches of various sizes (three of which belong to Government), and numerous trading crafts, keep up communication between the stations, estates, and rivers.

The population is increasing at the rate of about 1,000 per month. India is also looked to as a probable source of labour supply, and the hope is entertained that the Indian Government will place no obstacle in the way of immigration to North Borneo, where the government of the country is like their own, and where every coolie is registered and protected under the Estates Labour Ordinances.

The foreign trade returns of North Borneo for 1888 give the value of exports as $447,569, and the imports as $1,261,997, while the revenue and land sales for 1889 are estimated to realise about $421,000. The expenditure is estimated at about $382,000. These figures give sufficient encouragement to the shareholders of the company, and if compared with the figures for 1881, which I quoted at the beginning of this paper, they give some proof of the success of the undertaking.

These results have not been arrived at by oppressing the natives and people by taxation, but by developing and improving the natural resources of the territory. Indeed, I do not believe there exists a civilised country where the taxes are so light as they are in North Borneo. There is no tax of any kind on food or clothing. Even the taxes on opium, spirits, wines, tobacco, matches, and salt which exist, bear no comparison with other countries.

Communication with the interior of North Borneo is by river or native roads. As yet there is no railway, although the time is doubtless drawing near when this will become necessary, especially through the centre of the country, near the watersheds of the different rivers, which cannot be reached by boats. Meantime, and for all time, the country has in Sandakan, Marudu, Darvel, Gaya, and Ambong, bays and harbours such as few countries can boast of, and in her navigable river system ready-made permanent highways to and from the interior.

Few people who have seen North Borneo as it was and as it is now can doubt the success of the undertaking in every way, and not the least is the civilising of a hitherto unknown country, and the extension of British trade and commerce.

BOOK NOTICES.

Commercial Geography, having Especial Reference to Africa. By J. H. Silberbach. Geo. Philip and Son, London. 1890. Price 4d. 4to, 32pp. Map of Africa.—This is one of the handbooks prepared by Mr. Silberbach to illustrate the method of teaching Commercial Geography introduced by him in the Wirral Diocesan Schools, of which he is one of the honorary managers. The handbook is intended for the use of the teacher, who has before him one of the boxes filled with the native products. The handbook will commend itself to all teachers, giving a large amount of information, intelligently, and in an interesting form. We hope Mr. Silberbach may have the opportunity to develope his method in regard to other parts of the world.

To South Africa and Back. By John Finch. Ward, Lock and Co. 1890. 186pp., with numerous Illustrations.—This book is the record of a journey through Cape Colony, Natal, Orange Free State, and the Transvaal, and includes visits to the diamond and gold fields. It is a very readable little volume, with a number of full-page illustrations. The description of the voyage and of the incidents of travel are lively reading. The saddest part of the book is the description of the leper settlement on Robben Island. The book will interest many of our members, particularly those who have been to South Africa, or those who are interested in the mining and farming industries of the South African Colonies.

Liberia. By Herr J. Büttikofer, Curator of the Royal Museum of Zoology, Munich. With 5 Maps, 37 Illustrations in the text, and 18 full-page Views. 440pp. Vol. I. Leyden: E. J. Brill. 1890.—This is a careful, well-illustrated description of Liberia, and will, when completed, become the text-book for students of that republic. We have long wanted a book of this kind, and are very glad to welcome this scholarly work. The present volume describes the country generally, paying particular attention to questions of natural history and botany, the districts of Monrovia, Cape Mount, the Queah River, and the inner lands being dealt with. The remainder of the country will no doubt be described in the concluding volume. The book is one of great interest, and some of the illustrations are very striking, whilst the carefully-drawn maps will render the book permanently valuable.

LOCAL GEOGRAPHY.

By Councillor JOSEPH HARDING, of Preston.

[Read to the Members in the Library, March 1st, 1890.]

In looking over a subject upon which to address you this evening,* it occurred to me that home would not be altogether uninteresting. I have therefore chosen as my subject, *Christ Church Ward*, feeling certain that we might profitably spend a short time in glancing at a few of the very many interesting facts and histories that surround us.

Christ Church Ward, which I have had the honour to represent for over the last nine years as one of the six members in the Council, comprises the area of the town of Preston bounded by the River Ribble and Marsh Lane, Bridge Street, Friargate, Market Place, Glover's Court, and Glover and Frenchwood Streets.

The ward was first formed in the year 1835, on and as a result of the Municipal Reform Act, the town being then divided into six wards; and, subsequently, by the Act of 1881, through the extension of the borough boundaries the wards underwent a further change.

The population of Christ Church Ward, according to the corporation return, is 13,160. This calculated at five persons per house, as an average, gives 2,633 houses. This ward is the healthiest in the town, as seen from the following table extracted from the medical officer of health's (Dr. Pilkington) last annual report:—

Total Deaths, Rate per 1,000.

St. Peter's Ward	23·40	St. John's Ward	19·86
Park Ward	20·88	Christ Church Ward	17·47
Fishwick Ward	26·22	Maudland Ward	18·96

In looking at the death rate, the question is one of importance, affecting the national and social welfare of the country. The rate per 1,000 is no doubt excessive; with our natural advantages it should not be more than 12 per 1,000 per annum. It naturally suggests itself that for this there must be some cause. To my mind we are not working on strict lines of sanitation. In very few words I would put this before you—matters worthy of thinking over. All, or nearly so, downspouts, conveying water from roofs of buildings, are wrong in construction. Funnels at the head are too contracted. Syphons are a delusion. They tend to foster disease instead of preventing and dispelling it; and as a general principle all pipes are too small to effectually carry out and provide for effectual ventilation.

The best example, to my mind, in Preston, is that adopted by Mr. Reah, the borough engineer, in his own house. I confess that I have not seen it so fully adopted before, but so far as I have had the opportunity of judging, it provides the requirements of a great sanitary necessity.

Instead of closing up street gratings, multiply, if possible, a thousandfold—*ventilate, ventilate.* The opponents of this school should endeavour to make themselves acquainted with the first principles, the A B C, of chemistry ; for if there is any truth in science, their anti-dogmas will go to the four winds of heaven, the only place suited for sewer gas, and the safeguard of health.

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* Read to the Christ Church Young Men's Society, Preston.

It is not at all singular that our death rate should be so low, though at the figures at which it stands, 17·47 per 1,000, it is far more than it ought to be. There are many reasons to account for the advantages of our ward in the health of its inhabitants. Primarily, the situation being on the south-west of the town, the prevailing winds, for the greater part of the year, coming from these points of the compass, necessarily give us the first breath of pure air. Again, the ward has the advantage of the parks, and generally more open spaces and areas in, around, and near to the dwellings. Bounded as it is, it escapes, to a considerable extent, the sewer gases of the town, the sewer gas finding a vent for the most part in the higher districts. The elevated lands of Penwortham point to the most healthy and eligible sites for residential properties in the early future.

Speaking generally, further legislative powers must be obtained by the corporation, and rigidly enforced ; efficient and extended ventilation must be provided for both main and minor sewers ; the adaptation of and connection with all tall chimneys in the borough as ventilating shafts must be insisted upon ; last, and most important of all, we must inculcate the necessity of perfect cleanliness, the observance of the simple laws of sanitation, and motherly care and forethought in nursing and feeding children, for our infantile mortality is a blot upon the inhabitants of Preston. Without these the corporation sanitary authorities may toil in vain, in Christ Church and all other wards of the town, to lessen the continued very excessive gaps that death is making in our population.

The rateable value of Christ Church Ward is £92,941 15s., that of the whole borough being £339,440 5s. When the Ribble docks and works are advanced to allow of substantial shipping, it is certain that no ward will increase in a greater ratio of rateable value.

Christ Church Ward has largely been the scene of many of the stirring events of the past, notably the revolution in the 17th century.

On the 10th of February, 1643, Preston was stormed by the Parliamentary forces and taken—the attacking army proceeding from Manchester, reinforced by contingents from Bolton and Blackburn, attacking from the south or the river side of the town. Further scenes of fighting took place in 1648, 1651, and 1714. Along Broadgate, in the bed of the Ribble, near Penwortham Bridge, are remnants of what appear to be old oak stakes or piles ; tradition states that these were fixed probably about 1648, for the purpose of constructing a bridge or ford for the soldiers to pass over in the troublesome times of Charles I. and Cromwell. One thing is certain, that very great fighting took place along the Penwortham and Walton sides of the river, and in these troublesome times the only bridge over the river was one near the present Walton Bridge. Whilst mentioning this I would call your attention to the numerous skulls and bones found in the excavations of the new river diversion. It is not all improbable that these have been washed there and deposited where found by the ever-varying channel of those days, being portions of the slain most probably in the terrible battle of 1648. More recent dredging operations, near the Naze, have brought to light skulls, embedded in the blue clay, which may have lain there for many generations.

In passing, I may just allude to the fact proved by science that Preston, and indeed the whole of the country, was once under water, and this accounts for the sea shells and sand found in the excavations in Christ Church and other wards.

My object this evening, however, is more to look at my subject in the light of the present and not of the past generations. I have brought here, for your inspection, a very excellent copy of Shakeshaft's Map of Preston, published, it is supposed, in the year 1809, which will the better enable us to form an idea of the ward in the early part of this century; also a lithographed view of the town, taken from the south-west. We are indebted for the loan of this to Mr. Wm. Ascroft, J.P. Eighty years have now passed away, and how altered and varied the district, all the result of the strides of science and education—the firstfruits—"Ring out the old, ring in the new."

Professor Huxley stated in his presidential address before the British Association, at their annual meeting held at Dublin during the year of his presidency, "that whatever were the strides made in science during the past fifty years, they were as nothing in comparison to those that will be unfolded to the world during the next fifty years."

The utilisation of water, generating steam as a motive power, has resulted in the invention of the railway system, and to the fact of the railways we owe not a little in the development and prosperity of the ward.

It is worth our while very shortly to glance at this. We have at the present time three separate and distinct companies owning land, and portions of their railways passing through the ward, namely, the London and North-Western, Lancashire and Yorkshire, and West Lancashire Companies, with running powers granted to other companies.

The London and North-Western Railway Company had the first railway station a few yards west of the Victoria Hotel. It was opened for traffic about the year 1838. Subsequently the station was removed to the old station which we all remember on the site of the present commodious and handsome station. The Lancashire and Yorkshire Railway Company always have had a distinct railway station fronting Butler Street. These two companies conjointly in certain proportions own many acres of land in Christ Church Ward. What is commonly called the Preston and Wyre Railway is owned through the ward—two-thirds by the London and North-Western Railway Company and one-third by the Lancashire and Yorkshire Railway Company.

The West Lancashire Railway in the borough only approaches and terminates in Christ Church Ward. All being well, this line will be developed at an early date, and materially add to the prosperity of the district and town.

The railway companies are by far the largest ratepayers in the borough.

What is commonly known as the Lancaster Canal has its terminus in the ward. It was owned by "The Lancaster Canal Company," subsequently purchased by the London and North-Western Railway Company, in whose hands now rests the proprietorship. The canal was first opened in 1798, from Preston to near Burton, in Westmorland; afterwards, in 1833, completed to Kendal, under the same company. I believe, in 1802, communication was made between Preston, *via* Canal Bridge, the Summit, and Leeds and Liverpool Canal. All of us remember the old tramway bridge, its wagons, quaint machinery, &c., all antiquated relics of the past. With the discontinuance of the tramway and its hoisting apparatus an arrangement was come to between the London and North-Western Railway Company and the corporation, amongst other things the railway company conceding to the corporation the site of the tram line from Garden Street, including the Tram Road Bridge, to a point nearly opposite Penwortham Factory. Hence the pleasantly planted, beautiful promenade and walk the people of Preston enjoy over the river, free of cost or toll. The corporation, on the other hand, gave up to the railway company all rights to the ancient footpath that used to go from Garden Street, under the railway bridge, to Walton's Parade. These were the main items of the agreement, and have proved to be of mutual benefit and advantage.

There is a singular matter in reference to the canal, though it only slightly touches within the boundaries of the ward. It may be remembered that the London and North-Western Railway Company opposed the Ribble Bill of 1882-3. The only ground upon which this opposition was founded was the power given by an obsolete Act, though still in power, to pump out of the Ribble water to supply the needs of the Lancaster Canal. The opening can be seen in the face of the quay wall, nearly opposite the Victoria Warehouses. The culvert passes along the north side of Marsh Lane, and ends in close proximity to the Preston Saw Mill Company's premises. Should there be any scarcity of water, supplies are amply provided by reservoir storage, more than ample to supply its necessities.

In the latter part of the last century, at the time of actual construction, it became obvious to the proprietors of the canal that if a connection could be made between the Lancaster and Preston Canal with the Leeds and Liverpool Canal direct, thus connecting the North, Preston, Liverpool, the Lancashire coalfields, and Yorkshire, a great impetus to trade would be the result. In order to effect this connection it would have been necessary to construct an aqueduct on the site of the present Tramway Bridge, and from this to the terminus of the canal, at the coalyards, with the Leeds and Liverpool Canal at the Summit, which is about one mile above the village of Bamber Bridge. With this object in view the eminent engineer, Mr. Rennie (the first one), father of Sir John Rennie, was consulted. He made surveys, general plans and estimates, and in the year 1794 presented his report, estimating the cost at £94,979.

I pass on to consider the public parks that lie within the boundaries of our ward—the Avenham and Miller Parks. These have cost the town, in formation, laying out, and planting, £20,207, and the annual cost of keeping in order is £450. These figures I have gathered from the official returns of the corporation. All must admit that we, the inhabitants of Christ Church Ward, are singularly favoured in having in our midst such a great boon to health. In a few minutes we can retire from the "madding throng," and shut ourselves from the hum and babble of life. It has often struck me that our local parks and their approaches might be made more attractive. I have recently touched upon the question of "Landscape Gardening," and upon that I will not enter. I cannot, however, withhold from making a suggestion bearing specially upon the entrance to the Miller Park from West Cliff. The slope of the land to the right overlooks the cricket ground, both of which belong to the town of Preston. This slope is sheltered from the north and east, and I know of no more comfortable, sheltered spot in Preston. Instead of making this a nursery, which it practically is, to supply the constant necessities and requirements of the parks, why not lay it out in such a way that the masses of the people can beguile their Saturday afternoons in witnessing the very excellent cricket matches—a manly game that all sensible and intelligent Englishmen admire. True, it may militate against gate money, but I, for one, would sooner give them back the rent, and let them have the land for nothing. It is money well invested if it provides and gives to all sorts and conditions the happy change so necessary in this busy world.

Christ Church Ward varies in elevation above the sea level. Between Broadgate and the Town Hall there is a difference in round numbers of nearly 80 feet. It is singular to notice that from the Town Hall to the Unicorn Inn there is a fall of practically 50 feet. Moor Park Avenue and Fishergate at the Town Hall are nearly on the same level.

I will not weary you with the story of churches and chapels in our midst—they are well known and fully recorded by the past and present local historians, to whom I am much indebted for valuable information. The local records of the past affecting our own immediate district must and always will command our interest.

On two questions arising therefrcm I will only dwell. First, the building of Fox Street Schools, the result being a special vote of thanks given to the Protestant friends for their generous help and assistance in contributing to the funds for the erection of a building dedicated to the cause of education. Secondly, in reference to the site of a Quakers' Chapel on the spot where Maudsley's shop is. The present corner, including a portion of Chapel Street, was used as a burialground. Under the present flags and buildings there are, at present, numerous gravestones recording the deaths and burials.

Rapid strides in the march of progress have been made in the present century. In 1809 Lune Street had no record—was not made—the principal road from Fishergate to Friargate being Chapel Walks. In the records of the past we find it noted that a grand theatre was erected at the bottom of Fishergate (our present Theatre Royal). During one decade, with scarcely an exception, did any town in Great Britain develope or extend more than Preston. I find it recorded that a gentleman called Mr. Knox erected a house in Marsh Lane—remembered by most of us as being erected nearly opposite the lower end of Wellfield Road, on the south side of Marsh Lane. This was designated Knox's Folly, the gentleman in question being considered insane in constructing and building a house so far out of the then confines of Preston.

There was in the last century a deep gully known by the appellation of Fishergate Chasm. This crossed Fishergate in close proximity to or near Spring Bank. Glancing at Fishergate it is easily seen that from Bow Lane to Broadgate it is filled up or formed above the level of the original ground.

The names of roads are singular and deserve a passing glance. Bow Lane can only be of one derivation—ere it verges into Spring Street it presents somewhat the appearance of a bow. Fishergate practically means *Fishers'* gate, Friargate *Friars'* gate, evidently from the history of the past. St. Mary's Catholic Church and Tulketh Hall, for generations previous to the early part of the seventeenth century, were the abodes of the friars and priests of the Church of Rome. Holywell Street points to a relic of the past, when there was a well supplying water to the inhabitants of the district. Fortunately, nowadays, the advance of science has proved that, without exception, no water in a well constructed in a town is fit for human consumption. That terrible scourge of humanity, enteric fever, or, to put it more plainly, typhoid fever, is only generated and developed by impure water or sewer gas.

In the days of my boyhood I well remember the general great love of flowers. The site of Harding's Stables, formerly owned and occupied by the late Mr. Bairstow, was charmingly cultivated, especially with dahlias, and for many years took first prizes at the local shows.

Many of us, comparatively young, are sufficiently old to remember extensive brickworks in the centre of the town, notably adjacent to Hill Place. Some of us, to our schoolboy sorrow, have had exploits in the claypits, especially when we could for the occasion borrow a few planks wherewith to construct a raft; and as home we went from school, our satchels, then a local institution, had the benefit of immersion. White trousers were then sometimes worn, and what a weary plight was the result.

The introduction of gas, in the year 1816, was a marked progress in the town. It is stated that Preston was the first provincial town lighted, and that the Preston Parish Church was the first sacred edifice in Great Britain lighted with gas.

Relics of the past are rapidly passing from us. In former days, in the early part of the present century, torches were carried by the residents of the town, and at the front of some of the houses were torch extinguishers—the last one, I remember, was in front of Stoneleigh Abbey Hotel, in Fishergate. I have a lively recollection in my early schooldays of seeing something wrong, for we had to grope our way home in the dark, the supply having failed. I am afraid that broken lamps in Fishergate were but types of naughty boyish miscreants.

Many notable men have in the past resided in our ward, all now shadows of the past.

I have abstained from entering upon the question of the Ribble development, and only slightly will I touch upon it, as arrangements are at present, and they are unlikely to be altered. The principal development of future shipbuilding will be in Christ Church Ward, lying between Fishergate Hill and Marsh Lane, some 25 acres being set apart for this object.

If material improvement has to be made in the ward as regards its health, further sanitation will have to be carried out. I look upon some of our roads, notably Hartington Road and South Meadow Lane, as anything but creditable to the corporation. In the recent sale in Corporation Street we are stultifying ourselves. We make by-laws and then are the first to break them.

Time passes, and I must bring my remarks to a close. The subject upon which I have ventured to address you is a large and comprehensive one, and cannot be grasped within one short address. I am honoured and obliged by your presence here this evening, and amply repaid if I have led any member to see that here are subjects that are well worthy of our interest and consideration.

NEW ATLASES.

The Modern Atlas of the Counties of England and Wales. 58 Maps and Index. Imperial 8vo. W. and A. K. Johnston, Edinburgh. Price 12s. 6d. 1890.—This atlas contains 58 county maps, fully coloured, on the scale of seven miles to the inch, and shows in each county all towns and a good many villages, railways (with stations marked), roads, canals, estates, and antiquities. The maps are all drawn to the same scale, which makes the atlas very valuable. The book is handy in size, the index full, and the maps are easy to read. It is a book to have at hand for reference, and is well done.

The Cosmographic Atlas. Imperial folio. Price 21s. Fourth edition, 1890. This well-known and very valuable atlas has reached a fourth edition. It is a book of great value for use and reference, and is especially of value to teachers. The work is very complete, and contains 40 political maps, with an index; 9 historical maps, with explanatory and alphabetical index; 3 classical maps, with explanatory letterpress and index; 4 physical maps, with explanatory letterpress; 5 Scriptural maps and 6 astronomical plates, with explanatory letterpress. We have no other atlas like this. It is very complete. The political maps are brought up to date. It is accurate and well printed. The volume is handsome, and must be exceedingly useful to students of geography. The price places it within the reach of all. No school library can be complete without a copy.

The Handy Royal Atlas of Modern Geography. By A. Keith Johnston, LL.D., F.R.G.S. Imperial 4to. Price £2 12s. 6d. W. and A. K. Johnston, Edinburgh and London. 1890.—This is a new edition, the maps, 51 in number, being brought down to date. The atlas is printed with the usual care of the publishers, the recent territorial adjustments are carefully noted, and for the purposes of a book of this kind, particularly to the British people, it is of great value. The book is, as described, "handy," with a copious index of about 60,000 places. The maps are pleasingly coloured, and it is a very admirable collection of maps.

DESCRIPTION OF A CONTOUR MAP OF HUDDERSFIELD AND DISTRICT,

Designed and Drawn by FRED. D. KING, Bradford. Published by E. J. Arnold,
3, Briggate, Leeds.

[Addressed to the Members at the Memorial Hall, Tuesday, Apri 15th, 1890.

It would be strange if the characteristic intellectual activity of our age had neglected either the science of geography or the art of map-making. Time was when the satirist might safely twit "Geographers," who,

> "in Afric maps
> With savage pictures fill the gaps,
> And o'er inhospitable downs
> Place elephants for want of towns."

But all that belongs to a vanished past. The age which put up with "Shakspere and the Musical Glasses" as an accompaniment to "The Use of the Globes," and which carefully balanced the Terrestrial with the Celestial globe, as ornaments to the library or classroom, was not likely to trouble itself greatly either as to the quantity or quality of the geographical information with which it was supplied.

To this age of ignorance and indifference with respect to geographical knowledge succeeded that of "the schoolmaster . . . abroad." Information, it was now held, could not be too widely diffused, and, in accordance with the new idea, cartographers filled their maps with a host of names, all of which were more or less important, but few of them equally so. That, however, was matter apparently for the learner. The cartographer had supplied a liberal allowance of facts: it was left to the industry and ingenuity of the student to classify and assimilate them. Unfortunately the task was outside his inclination and beyond his power. The natural consequence was that but little geographical information was gained, and that little, being acquired without relish, was lost without regret.

It would be asking too much to expect an average student in geography to construct a map in which the towns should be classified and graphically represented according to their relative importance with respect to population. An ingenious man, finding the position of a place on an ordinary map, and finding the population of it from his text-book, might put the two facts together and construct a map in which, by signs of his own composing, he would be able at a glance to get a fairly accurate notion of the population of any town in the district he was studying. And having done this he would be as forward, and only as forward, as the art of the cartographer ought to have made him without an effort on his part.

The distribution of population is one of the ultimate results of our civilisation. If the student received little help in setting that question in a fair and striking light, still less did he receive with respect to the distribution of hill, valley, and plain, which are such important factors in determining the cause of it. Whether we consider geography from the historical, the commercial, the geological, or the ethnographic point of view, few things are of more importance than knowledge of the contour of a country. Contour largely determines climate and productions; it illustrates geology, and helps to interpret history. It was the hills of Wales, of Devon and Cornwall, of

Cumberland and of Scotland, that saved the remnant of the Celts from the sword of the Saxon ; and that, possibly, less on account of the difficulty they presented to an invader than to the comparative worthlessness of the conquest when effected. The fertile valleys were worth fighting for, from a commercial point of view ; the naked hills could yield little to men who lived principally by agriculture ; and so the very poverty of the hills became an element of strength to the race who had been driven to inhabit them.

How little help the student has received with respect to both contour and population nearly all maps bear eloquent testimony. There cannot be two opinions as to the marvellous accuracy and finish of our own Ordnance Survey. As specimens of cartography the maps are almost unapproachable. But even these fail largely to give a true idea of relative height. And this is an unavoidable defect where only hair shading is employed.

In reference to this phase of cartography it must be confessed that the Germans and French are showing us the way, and that we are only beginning to move in it. Even the best German maps, however, do but indicate what art can and ought to do for geography. As far as possible a map ought to be a picture as well as a plan, and its value to the student will be in proportion to its success in realising this ideal. It is impossible, however, with a few tints to give an adequate representation of the contour of a country, and every additional tint unfortunately adds to the cost of the map.

Economy, however, is tested not only by the cost of production but by the value of the article produced ; and if we aim at making geography interesting, or the teaching of it effective, we must be prepared to pay a fair price for the article we demand.

The ordinary map, teaching very little as to contour, is radically defective ; the mental picture that the student acquires from it is confused and imperfect ; and if he should be a teacher the picture he produces for the benefit of his class is necessarily an imperfect representation of a faulty study.

In the interests, then, of economy, *i.e.*, of *thoroughness*, the contour map becomes an article of prime necessity in teaching geography.

The modern notion with respect to the teaching of geography is that the child should first be taught to understand that with which it is closest in contact, and from that pass on to that which is more distant. This is exactly opposite to the older ideal. In fact, local geography is as distinctly a modern invention as Hypnotism or the Phonograph ; our ancestors apparently believing that knowledge of one's immediate neighbourhood would, as honest Dogberry says of reading and writing, "come by nature." How ludicrously wide of the truth this notion was, any one who will take the trouble to test even a sharp child on the point may speedily convince himself.

The contour map of Huddersfield and district is an honest attempt to make local geography plain, interesting, and useful, and if it requires much explanation on the part of the teacher it has failed of its purpose. Primarily it is intended for use in schools, and to that end all aims have been made subservient. But it will be found equally useful in the office and in the library. All towns and villages, and nearly all hamlets in the district, are marked upon it, and the relative importance of each, with respect to population, is shown by circles of proportionate area. In a few cases, where the population of one place is included in that of another, *e.g.*, of Quarmby, near Huddersfield, the position of the former is indicated by a + only, its population going to swell that of its larger neighbour. The method of representing towns by means of circles of proportionate areas is a somewhat new departure in cartography, and one that is believed will add greatly to the usefulness of the map.

Not only are the names and positions of towns, &c., given, but the roads which link them to each other are represented with a fulness not often attempted in similar maps. This feature may possibly commend it to the attention of the ever-increasing army of cyclists.

The map represents a wide and interesting district, since it gives a section of the country right across the Pennine chain, and shows the contour from a level of 100ft. above sea-level in the valleys of the Aire and Calder on the east, and of the Mersey on the west, to a height of 1,909ft. in Black Hill, south-west of Meltham, and almost midway between the lowest levels on each side.

The first contour tint employed represents land less than 100ft. above sea-level; the next, land less than 200ft.; and from this each successive tint, deepening in shade, shows an advance of 200ft., until the highest band, that representing land between 1,800ft. and 2,000ft. above sea-level, is reached.

The district embraced in the map stretches from Bury on the west, to Barnsley on the east, and from Burnley, Bradford, and Leeds on the north to Manchester on the south. It is a district of nearly seven hundred square miles in extent, and the combination of bold natural features in close proximity to the great centres of population on each side of the Pennines which it presents gives it an interest that no other part of England can excel. The great hill-masses stand out with remarkable clearness, and the narrow valley between Todmorden and Littleborough—a valley into which road, river, canal, and railway are crowded—is also remarkable. So, equally, are the few roads which, in the age preceding that of the iron-horse, served as the only means of communication between Yorkshire and Lancashire. Noticeable among these will be:—

1. The Long Causeway between Halifax and Burnley.
2. The long, dreary road from Holmfirth to Oldham, across Saddleworth Moor. This road rises upwards of 1,600ft. above sea-level.

Perched up among the hills will be noticed the reservoirs, those at Woodhead just putting in an appearance to the south of the map.

The use of contour tints will be found helpful in teaching the river systems to the lower standards of our schools; and Calderhead (758ft. above sea-level), the source of the two Calders—of the Yorkshire Calder, flowing east through Todmorden and Wakefield, and of the Lancashire Calder, flowing west through Burnley—will afford a sufficiently striking example of a watershed. About a mile west from Calderhead is Thieveley Pike, the source of the river Irwell.

The railway system forms a special feature in the map. All railways are inserted. All stations will be found marked on them, and the distance in miles from Huddersfield will be found (where practicable) correctly marked on them.

The canals receive due attention. The most remarkable of them is the Huddersfield Canal between Marsden and Mossley, which for three miles and a half runs through the Standedge Tunnel, side by side with the London and North-Western Railway, both of them emerging into daylight at Diggle.

The map is a reduction from the six-inch Ordnance Survey, and the scale employed is that of two inches to the mile. About two-thirds of the area represented belongs to Yorkshire; nearly all the remainder belongs to Lancashire; a fraction is occupied by Cheshire, and a still smaller fraction by Derbyshire.

THE TRANSVAAL: ITS HISTORY, GEOGRAPHY, MINERAL WEALTH, AND PROGRESS.*

By W. Y. CAMPBELL, Hon. Vice-President of the Witwatersrandt Chamber of Mines.

[Addressed to the Members, in the Memorial Hall, Friday, May 16th, 1890.]

When I was honoured by a request from the Council of the Society to address you upon "The Transvaal," I felt that a better and more fitting choice could have been made : my suggestion to this effect, however, was in vain, and therefore it is I claim your indulgent hearing, while I tell you what I can in the limit of time respecting the land of my adoption, based on over twenty years' residence there.

The Imperial Macaulay of fifty years hence will doubtless call special attention to the phenomenal African craze now existing in the world. During the first three-fourths of the nineteenth century, America, India, and Australasia have occupied all the attention England or Europe had to spare for matters abroad. Africa remained a sealed volume, the contents of which were but vaguely or traditionally known to a few. In fact, a few years back the average European's knowledge of Africa might be summed up in Dean Swift's words, written over a hundred years ago—

So geographers in Afric maps
With savage pictures fill their gaps,
And o'er uninhabitable downs
Place elephants instead of towns.

Now, however, within a few years, and like the twinkling of an eye, all this has been changed. The mists of distance, of doubt, and of ignorance, which have for centuries veiled Africa, are rolling away for ever, and with a dazzling rapidity which finds its greatest development in that portion of the Dark Continent lying between the Cape Peninsula and the Zambesi River. It is but three months ago that Mr. Stanley went north on a lecturing tour, reviling the British Government for its apathy about the English heritage in Africa, and in the very midst his taunts were turned to laudation, his sneers to congratulation over the Anglo-German agreement. This has been followed in turns by Anglo-French, Anglo-Boer, Anglo-Portuguese, and Anglo-Italian African conventions, and from the Pillars of Hercules to Cape Agulhas Africa has been parcelled out by the great powers of Europe. The vast continent has been sliced and partitioned with the facility of cake cutting, and in a manner for which nor history nor legend has any parallel. Nay, the British Empire in Europe has been shorn of Heligoland with the sole intent of extending the British Empire in Africa. This change of feeling towards Africa, and specially to the congery of states and colonies which make up South Africa, is traceable to several causes ; but almost chief cause of all has been the mines and minerals of South Africa. A few years back and the home-residing Briton's view of South Africa was chiefly associated with such disastrous words as Sandhlwana and Majuba; but not so now—these are already the facts of buried history. The current attention-commanding facts are, that within the past twenty years South Africa has shipped over fifty millions sterling worth of diamonds to England, and within the last three and a half years the Transvaal from its one field of Witwatersrandt alone has shipped to England virgin gold totalling close upon four millions sterling. Those figures, when taken in connection with time and place, constitute Imperial facts, and will as such bear and deserve your close analysis.

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* The address given to the Members by Mr. Campbell has been added to and revised to date.

"The true wealth is that of the soil" is the gospel of political economy. Poets of all time have sung the jocundity of corn and wine, and when poets and political economists affirm a principle in mutual accord it is hardly for us to differ. At the same time, in these later days of the nineteenth century, and in face of the new needs of mankind, we can fearlessly submit that whilst blessed is the land of corn and wine, yet twice blessed is the land which adds to corn and wine an abundance of precious and useful minerals. California is, and Australia is peculiarly a land flowing with milk and honey and rich in stores of wheat and wine, and yet where would the development of those natural treasures be now but for the golden elixir discovered in the Sacramento canons and the plains of Ballarat? By virtue of their superadded mineral wealth, America and Australia have, during a mere half-century, sprung forward and front the world as nations to be reckoned with in the making of the world. In like manner, and reading the what-will-be of the future by the what-has-been of the past, it is not difficult for us to image the wondrous development South Africa is just on the br nk of; its natural limits of expansion and growth we may not set, but the proven facts facing us from all parts of South Africa indicate clearly an industrial development during the current decade which history will find it difficult to parallel.

Turning our attention to the mineral resources of South Africa, and commencing with the parent colony, that of the Cape, I will deal first with the Cape copper industry, which has its head-quarters on the Atlantic coast in Namaqualand. The copper is found in veins, the ore yielding some 30 per cent. of copper. The country about the mines is arid in the last degree, and the geology of the district shows gneiss predominating with intrusions of granites and greenstones.

The discovery of copper there is now a matter of two hundred years ago; but it was not until 1860 that a company was formed to work the deposits, and during the subsequent thirty years to date some 400,000 tons of ore have been sent to England, valued at eight and a half millions sterling. Turning from the useful copper, we may refer to the diamond industry of the Cape Colony, an industry which had no existence in 1866, but which has since turned out and shipped to England, as I have said, diamonds to a total value of over fifty millions sterling. The present production is on a three to four millions sterling basis yearly, and this figure can be lowered or raised at will of the company. So far, these diamonds have been found in "throats," as geologists class the peculiar "pipes" or "chimneys" in which those diamonds have been found. Outside those known throats, diamonds are found on the banks of the contiguous large rivers, and the assumption is well justified that the beds of those rivers, were it practicable to divert their streams, would yield as many gems as have been won from the mines proper. The best of the mines have been amalgamated and are now known as De Beers Consolidated. The belief of this company is that they have, by means of this amalgamation, secured the monopoly of the world's diamond market and supreme control of the output. Such is the hope of the company and of the De Beers shareholders; but I know of no geological reason why similar throats, equally rich, may not be discovered any day in the same district of Griqualand West, or neighbourhood where similar formations exist. Turning our attention to the coal fields of the Cape Colony, we have it, thanks to the prospecting energy of the Government and the scientific zeal of the well-known geologist, Mr. Dunn, that the coal measures of South Africa are found in the Colony at several points, and partially worked at Indwe and Stormbergen. Unfortunately the energy of prospecting has not been followed up by a development in mining the coal measures calculated to supply the Colony's needs, and do away with the necessity of importing from England, and appearances indicate that unless some more active policy of utilising their coal resources is pursued, energetic little Natal will become the coal supplier of the parent Colony as well as the fleets of the world calling at South African ports. Manganese ore, yielding 70 to 90 per cent., is reported plentiful in the Cape Peninsula. Crocidolite, an asbestiform and very pretty mineral, is plentifully found in the Colony, and, like the Scottish pebbles and caingorms, is in considerable demand.

Turning to Natal, we find there magnificent resources of coal, the northern angle of the Colony being one large coal field, and which at several points is being actively developed, and also already placed in connection by rail with the seaport of Durban. The coal is of specially good quality, and in seams of a size well calculated to facilitate economical working. The most cursory view of the extent of Natal's coal wealth, and of the geographical position of her port, indicates clearly that Durban should, within the current lustrum, become an important Imperial and commercial coaling station. Iron and limestone deposits of value are reported, but not yet proved. Gold has been found at several points, but the Natal gold industry is nowhere near the output stage yet. Asbestos is being found at several points, but so far only of poor quality; but even disallowing Natal the possession of any mineral wealth save her coal, in that coal and in her position she has a source of wealth it would be impossible to estimate the value of, alike to herself, to South Africa, and the Empire.

Surmounting the great Drakensberg range from Natal, we emerge on the rolling plateau of the Orange Free State, the mines and minerals of which are still *in futuro*, not because there are none, but, with the exception of the coal deposits in one part, and diamonds in another, very little has yet been done in the way of prospecting. The State is a large one, and thinly inhabited, and there are no known indications of rich auriferous deposits to attract the adventurers of the world yet. Petroleum is reported as discovered, but whether it occurs in commercial quantity or only in fragmentary distillations has yet to be proved; in any case the indications are worth the use of boreholes for prospecting. Gold is found in several parts of the state, but when the ore vehicle is in quantity the mineralisation is poor, and where the gold is rich it is in disconnected, unreliable stringers. What gold deposits may yet be found as prospecting goes forward we cannot determine; but for the present the proven minerals of the Free State may be summed up in diamonds and coal, in themselves no mean natural heritage.

Swazieland demands a passing attention. The gold bearers in that country are quartz reefs, which in the main are low grade, with, however, at places very good rock indeed. Much, however, requires to be done before Swazieland can be described as rich in minerals.

Turning our eyes seawards once more, we have on our left the native States of Zululand and Tongaland, and on our right Basuto and Pondo Lands. Mineral wealth in all are credibly rumoured, but save in Zululand, where auriferous quartz reefs are being worked by Natal colonial capital, little is known. Northwards, again, lies that vast tract of country, stretching from ocean to ocean, and bounded on the north by the great Zambesi River: Gazaland, Mashonaland, Matabeleland, Khamaland, Moremiland, and Bechuanaland. A glance at those countries, coupled with the flitting, intermittent evidence, which during a twenty years' residence in South Africa one necessarily accumulates, I am forced to the conclusion that great as has been the wealth of Kimberley and of Witwatersrandt, in those northern territories from which, for the first time, the veil is being lifted, there are even greater riches to be laid bare, and to command the attention of Europe. America has had its gold rush, and Australia likewise; the South African rush is yet to come. It came in America and in Australia with the alluvial, and it will likewise come in South Africa with alluvial. So far as discovery has gone, rich alluvial for the individual digger has not yet been discovered in the older states of South Africa; but it is practically certain that in the new territories now being opened by British pluck and British money will be disclosed as rich Pactolian streams as those which turned villages into cities and provinces into nations in other parts within the memory of living men. One deep and important regret may be mentioned in this connection; and that is, that the rich territory of Gazaland has been gratuitously offered to Portugal by England, despite the fact that the king and people of that territory refuse to have anything to do with the Portuguese, their natural enemies, and clamour for alliance and friendship with England, despite the fact that the territory is one which by sphere of influence belongs to South Africa, and which will yet, despite Imperial political shortsightedness, revert to South Africa. Gazaland is undoubtedly rich in alluvial gold, discovery is moving apace, and once facts are fully known, that mildew on our fair South African littoral, the Portuguese, will vanish before the stress of civilisation, resulting on the coming rush of miners and explorers. I would ask you now to revert with me to the Transvaal Republic and its minerals and mines. I will deal with the gold industry first, and with the leading section of it, namely, the Witwatersrandt Gold Fields.

Witwatersrandt is the district containing the now famous Main Reef line, *i.e.*, several distinct layers or seams of auriferous conglomerate, varying in thickness from 3 inches to 20 feet, and in richness from 1 dwt. to 60 oz. to the ton, but averaging about 2½ feet thick, and yielding 12 to 15 dwt. per ton. The seams dip south, at an average angle of about 40°, and the beds of ore can be traced on the surface for some fifty miles, running mainly and continuously east and west. The depth of the seams is unknown; it has been proved to be over 600 feet, and from the geological indications a mile deep will not bottom them. The Witwatersrandt gold industry is, therefore, based on several 2½ feet seams of gold-bearing matter going a mile deep, and running fifty miles east and west; thus the gold contents and tonnage of gold ore is illimitable, and quite beyond the treatment of this generation. The gold won to date has been from surface and next to surface mining, and the seams are practically untouched.

The obvious richness of the Witwatersrandt deposits created last year a mad spell of speculation, which disorganised things very much and created many temporary evils. You in England lost your heads. We on the spot were every whit as bad. Auri Sacri Fames became a raging fever on both sides of the water, but I believe the worst sufferers were the people of Johannesburg themselves. The very richness of the deposits not only led to speculative calculations taking precedence of industrial figures and natural contingencies and obstacles, but afforded a splendid field, especially in London, for the emission of nominal gold-mining companies, in reality arrant swindles—in fact, the richer our ore deposits were the greater and more brazen the concurrent frauds. Even the good properties were strangled in their birth frequently by the grossest mismanagement which dogmatic inexperience or malice intent could compass; but all this is righting itself by a natural reaction, and the ups and downs of the markets and the history of individual ill-conducted mining companies in no way affect the true industrial merits of the fields. The fields have passed triumphantly from the prospecting test, and are now ready for development and gold mining on an assured basis. Reference has been made to the earnest already given and being given by the Witwatersrandt fields of present riches and of riches yet to be. The following figures tell their own tale, being the certified production of raw gold from the one field alone during the understated periods in ounces, the gold being worth on sale £3 15s. per ounce :—

For the whole year	1887	1888	1889	1890
Ounces	34,897 ...	230,917 ...	379,733 ...	—
For the first quarter of	1887	1888	1889	1890
Ounces	5,000 ...	38,137 ...	78,861 ...	109,524
For the second quarter of	1887	1888	1889	1890
Ounces	10,000 ...	51,183 ...	94,766 ..	115,425
For the first half-year of	1887	1888	1889	1890
Ounces	15,000 ...	89,320 ...	173,627 ...	224,949

	1887	1888	1889	1890	Total to Date.
January	No Monthly Totals Recorded.	11,269	24,986	35,038	
February..........................		12,162	25,800	36,886	
March		14,706	28,075	37,600	
April		15,853	27,136	38,799	
May		19,002	36,298	38,884	
June		16,328	31,272	37,412	
July................................		19,966	32,407	39,452	
August		19,877	32,142	42,861	
September		20,495	34,369	45,467	
October		27,775	31,914	—	
November		27,336	36,116	—	
December		26,148	39,218	—	
Ounces, Total	34,897	230,917	379,733	352,399	997,946 oz.

Total output for the three and half years being almost 1,000,000 oz. of gold, realising close upon £4,000,000. In 1885 the Witwatersrandt area was uninhabited, with neither a building, a mine, nor a battery. The place was practically in the wilds—some 500 miles from any seaport. There is now the nucleus of an enormous industry, and one large well-built town of some 40,000 inhabitants, and several smaller towns. All the food-stuffs and mining material had to be brought to the spot by ox teams at extravagant prices, and the gold that has been won has, till recently, owing to the non-mining class of people who owned and run the mines, cost practically as much as it realised. Railway facilities, added to expert mining, are reducing cost of production 50 per cent., and expert metallurgy is increasing percentage of gold saved by 25 per cent. Those two factors together make for a development within the next few years which will astonish the gold-consuming world. In conning these figures their true merit and value as indicators lie in the fact that the figures apply to the one gold field of Witwatersrandt alone, and which was unknown as a gold field till 1886-7 and is quite apart from the output of the other gold fields, viz., De Kaap, Malmani, Zoutpansberg, Klerksdorp, Komati, Vaal River, &c. The merit—phenomenal merit—of these figures also will be best found by contrasting them with the results being obtained in other countries, say such old gold-producing territories as the United States of America, after a century of development; Australia, after half a century of development; and Russia, after hundreds of years of working—then it will be seen that the young and barely scratched Witwatersrandt field is rapidly overtaking those countries, and in no case is the Rand output beaten by any other single field in the world. The deduction made, the contention urged, is that with such prospects of gold output, the rapid development of the State from its recent primitive Boer pioneer settlement status to that of a full-pulsed, prosperous, busy, and populous territory is assured.

To those seeking further corroboration of the facts stated, than is supplied by the steady progressive figures of output, it will be found in the expert reports of the many known professional geologists and mining engineers who have specially visited the fields and reported on them. They all, without reservation, state that it is the greatest gold field in the world.

This greatest gold field has so far only given an inkling of its enormous future; but its position in the world's markets five years hence and now are as different as infancy is from fuller growth. In that time the population and industries dependent on it will have increased many-fold, and for the sole reason of the immense and permanent deposits of gold-bearing matter, which will cost 5 to 7 dwt. to extract 8 to 15 dwt. of gold for every ton of that matter. A dwt. of gold is worth 3s. 9d. A fifty-stamp mill can treat three tons per stamp per day, or 45,000 tons per annum of twelve twenty-five day months. The average nett profit per ton, when ordinary business prudence and economy is practised in mining and milling, is four dwt. or 15s. per ton. My figures are not only attainable but have been attained and are being surpassed. In face of such figures and in face of the illimitable, absolutely illimitable, tonnage of 8, 10, 12 and 15 dwt. rock at Witwatersrandt, can the remotest shadow of a doubt be entertained as to the future of our gold industry there? That industry cares not for size of capital or market riggings—those are but the parasites on a body with an inherent vitality superior to all attacks.

The railway mileage and tariff to Johannesburg when open show a freight charge of £8 per ton from the seaport. At present it averages about £30 per ton by ox wagons, and the saving on the amount actually carried to Johannesburg last year would have been £1,600,000 had the railway and not the ox wagons done the carrying. About the end of April, 1891, the Natal line will be over the Drakensburg, at the Charleston terminus, on the Transvaal plateau, with only 150 miles of level country to be laid with rails to Witwatersrandt. When the railway is completed to Charleston a very large saving in cost of all things will take place in the Transvaal; and when the railway reaches Witwatersrandt the cost of mining should not be more than 50 per cent. of present rates, if so much.

Fuel, luckily, we have in abundance, the coal seams in parts overlying the auriferous conglomerate seams. The bulk of the coal is found at the eastern end of the main reef line, and a mineral steam tramway has been constructed and runs due west along the line of reef from the coalfields, yielding thereby coal at cheap carriage and at all times. This in itself is a distinct gain.

Water for ore dressing is a mere matter of adequate conservation, and the Main Reef Company, which fails for want of water, must blame either lack of funds or lack of forethought. Water is no difficulty at Witwatersrandt.

Tenure of gold claims is now on a more assured basis, thanks alike to the energy and persistent efforts of the Chamber of Mines and to the loyal hearing given to the Chamber by the Executive Government of the Republic. Titles may be impeached, but only owing to laches of the *quasi* owners, in the same way as titles are impeached anywhere, even in England, for due cause.

The climate you cannot better over seven-eighths of the State, and at Witwatersrandt, 6,000 feet above sea level, it is bracing, tonic, and healthy in every sense.

I have told you of the incubus on the industry caused by the want of railway communication; but there are several things the gold-mining industry suffers from which practically mean a further incubus on the industry, and with which we have been struggling and hope to come out triumphantly. One of these incubi has been taxation. The industry has been chiefly conducted with British capital in a foreign State, and between the governed of that State and the Government for a short time existed a state of things which was productive of antagonism and not of sympathy, which found unwitting expression in inequitable taxation upon the gold industry. A reference to the published figures of the Witwatersrandt Chamber of Mines shows that the gold industry of the Transvaal has been paying 50 per cent. of the total revenue. Just think what it would mean if the owners of the Welsh mines, or of the coal mines, had to pay one-half of their revenue to the Crown, or to the owner of the land on which they are situate, and out of the remaining half had to pay the cost of working and find a profit. But the gold industry was not to be put down, even by these terms and conditions, and after paying some 50 per cent. to the Government and the other heavy expenses to which I have alluded, it has proved itself the master of the situation and has struggled on. That antagonism which has been shown to the gold industry, the very industry that raised the State from bankruptcy to prosperity, has died out. Governing and governed are now no longer strangers, a rapid change has set in, and the Government is now anxious to work for and with the mining communities, and have also admitted those communities to a partial say in the Government itself, by yielding or granting a right to elect to and sit in a lower House of Legislature. That right will be exercised in the next year, and one of the first uses to which that right will be put will inevitably be the equitable equalisation of the contribution made by the gold-mining industry to the general revenue of the State. Another incubus from which the gold-mining industry suffered was the inexperience of those connected with the early management of the mines. In England, when any new form of work is started you have the whole world of capital and science with you and a railway in touch. In South Africa it is not so; you have some 500 miles of roads across which machinery has to be dragged, after it has been brought across the water; and then when we commenced crushing we found we had to pay disproportionate wages to often incompetent men, but, despite all, we have increased the output month by month. I have also referred to the question of metallurgy, and on this question I hope to hear some remarks from a gentleman most qualified to speak upon it. The extraction of gold from free ore is quite simple, and no chemical process is required, and yet we find that we really don't catch more than 50 per cent. of it; but the mechanical processes for catching it are in a high state of perfection elsewhere, and in some of the American States they catch 75 and 85 per cent., or 25 and 30 per cent. of the gold which in the Transvaal now goes away in the slimes. Possibly there are two classes of humanity in this room—those who have no gold shares, and shareholders in gold companies who have bought Transvaal shares at £5 and suddenly found them worth 5s. The first class can plume themselves on their immunity, the second class are enriched by experience often won too late; still, I fear that inquiry would discover that, in buying shares, they did not expend a tithe of the caution they usually exercise, say, in ordering a hat or choosing a necktie. I can assure the latter of my sympathy, and I can further assure them that had they used ordinary discretion they would not have had to taste that bitter cup. If they had first found out something about the mine, whether it was properly worked, and what chance there was of recovering the money, they would not be in the position they are in now. You may some of you have spent your money on absolutely worthless mines, and have only got worthless coloured paper; but because you find you have only got that paper, don't blackguard the true industry, but blackguard your own indiscretion in not picking proper mines in which to invest your money. The wages paid, too, are necessarily high, and when they are reduced—and action is being taken to reduce them—it will bring the whole thing to a proper industrial level. The Chamber of Mines are taking steps to reduce the wages of the native labourers to at most 10s. per week, and when that is brought about further improvements will be introduced, and the number of labourers in the best-managed mines will be reduced from 50 to 60 per cent. by the introduction of labour-saving and power machines, and instead of the native labourer fiddling his puny muscles at the work, we shall do the work in half the time and at half the cost by simply adopting the best methods of mining and the best class of proved machinery.

Now, as to the question of the Main Reef line, as some of you are doubtless aware, and as you will see at a glance if you look at this sketch (pointing to a plan at his side), you will see at once that the reefs which have been worked are a series of auriferous conglomerates, and the theory is that that part of the country has been at some time under water, and a conglomerate and sandstone series been formed, divided into various separate layers ; but now, instead of lying flat, it is, owing to upheaval, in some parts tilted almost vertical, and at others at an angle of 10 or 15 degrees, affording facilities for economical work, and is altogether different from the quartz reefs worked in other parts of the world. What is usually done is to sink a vertical shaft and cut the reef, and when each reef is cut to drive along from east to west, and stope out the reef above. Whether it would not be better to deal with the reef from the beginning on the incline, and not by putting down a vertical shaft at all, is at the Rand a vexed and an open question.

I don't think I need say anything more about the Witwatersrandt fields. I have told you that you have 50 or 60 miles of reef to work, running east and west, each some 2 or 3 feet thick, going down to an unknown depth, and if you simply take the cubical contents and find out the total tonnage, you will be astonished at the figures, and taking the yield of gold at 12 dwt. per ton, and the cost of working at 20s. to 30s. per ton, and you have ample margin for profit. You may ask, why do not such and such shares go up ? I am not concerned with the capital of companies. The market settles that. You also ask, where then are the dividends ? I reply, you are unreasonable. You don't draw rent while your house is building. Your coal and iron mines here in England did not pay dividends three years from turning the first sod of the industry. What concerns us is the yield from the gold mines, the yield from each ton of rock, and that it leaves a profit margin on working, and this or that failure does not affect the industrial aspect of the mine values.

Leaving Witwatersrandt we will look now at the other gold fields. There are the De Kaap Gold Fields, which are in quite a different formation—*i.e.*, the gold is in quartz reefs. The district contains many splendid mining properties ; but the district being mountainous, communications have to be perfected before the known wealth can profitably be dealt with on a large scale. Railway communication is now being established, and under two years from now there should be a consequent heavy revival in the mining industry at De Kaap. The De Kaap fields produced during last year 35,000 oz., and things have been stagnant there ; but next year there should be an output which undoubtedly will bring that district back to your minds again.

Malmani, Zoutpansberg, Vaal River, Lydenburg, and other gold centres are barely prospected yet, but proofs are abundant and clear that in some of these places the gold deposits are strong enough to create, in time, new towns, and occupy a very large amount of people and capital.

The Klerksdorp fields are a repetition of the Main Reef features—*i.e.*, immense deposits of gold-bearing conglomerate, with the difference, however, that little as has been done at Witwatersrandt, much less has been done at Klerksdorp, and, whatever you may have heard as to one mine, that does not condemn the district. The failure of one mine does not condemn the district, and there are many properties which it will not pay to work with the present rates of carriage ; but so soon as you get railways there—which will be at no very distant date—these mines can be placed on a solid, industrial, and payable basis.

I have referred you first to gold, and next in order comes coal. In the Transvaal you have some 10,000 square miles of solid coal fields, and that is a pretty good heritage even for a country without gold at all, and on these coal fields you have at times coal coming out of the same shaft as the gold; and in the same country you have abundance of ironstone and limestone for your flux, and you have all the elements that go to make up a very large iron industry, and in the future that ironstone will be of great value, but at present it is practically worthless because we have no means of communication. But railways are advancing and will soon intersect the country, and then you will have an industry that will take its place amongst the other industries of the country. Then there is argentiferous copper, principally proved at the Willows Argentiferous Company, in the Pretoria district, and, although they have not paid a dividend, it looks like steady dividends soon. It is simply a question of time, working, and of machinery. You cannot go and peg out your claims to-day and pay a dividend to-morrow; but silver augurs to become a great industry in the near future of the Transvaal.

Behind all this mining wealth you have the back country which will grow corn and provide cattle for a vast population of Europeans. The Boers were by stress of events a primitive, almost nomadic race, and have not been accustomed to grow more than was needed to meet their own requirements, and who have gradually, through stress of circumstances, withdrawn from agriculture, there being no markets till now, but the land is there waiting for cultivation, and the Transvaal will yet be a great producing country, outside its one great industry of to-day. My hope is that a great deal will be done in the way of agriculture. The gold will command a population, that population will require to be fed, and therefore, the gold fields and agriculture will go on prospering together, and you will have at once cause and effect there.

A word as to the population of the Transvaal of to-day. In the year 1882, when England in her wisdom restored the country to the Boers, you would have found the population 5,000 English, 50,000 Boers, and somewhere about half a million natives. To-day, it is about 60,000 English, 50,000 Boers, and still about half a million of natives. If you had gone there then you would have found the greatest bitterness existing, a feeling of humiliation amongst the so-called loyals, and a sense of bitterness amongst the Boers, coupled with a feeling of triumph. This has disappeared. It was to a large extent owing to the bureaucratic form of government which you employ here in England in dealing with your distant colonies, and to the absence of that better class Civil Service which in some other parts of the world pays special attention to the wants of the people. If you go there now you will find all that changed, and that the Boer finds that the Englishman is a human being who comes there intent on business. I must leave to your individual imaginings what the future will be. You have seen its wealth in minerals, and for agricultural purposes; you have seen the influx of population rushing to that country; and you can come to but one conclusion as to what such a country, already important, will be in 20, 30, or 40 years to come. I cannot read the future, or say what is in store for that great country lying north; but I am of opinion—and it is derived from a good deal of observation—that there will be enormous discoveries of alluvial in that part of South Africa, and especially in Gazaland, and wherever there is alluvial a rush follows, and in that case what has been written of the wondrous transformation scenes, rapid progress, and immense development of other countries may be written again of South Africa, and during the current decade. With these remarks I leave the subject.

REVIEW.

SELLA, V. AND VALLINO, D.—Monte Rosa e Gressoney. Oblong 4to, 59 pp., illustrations. [Mr. J. Scott Keltie, in "Proceedings of the Royal Geographical Society."]

SIGNOR VITTORIO SELLA has, in conjunction with Dr. Vallino, found time between two summers in the Caucasus to illustrate one of the most interesting of the valleys of the Italian Alps. Gressoney lies south of Monte Rosa, and its stream, the Lys, falls into the Dora Baltea near the lower end of the Valle d'Aosta.

The romantic scenery of the lower gorges, the pastoral charms of the upland meadows of the Val de Lys, are little known to the herd of holiday-makers; but they have attracted the better sort of Alpine travellers, from De Saussure and the Rev. W. S. King, the author of "The Italian Valleys of the Pennine Alps," to Robert Browning and "Margarita di Savoja, Regina d'Italia," who last year emulated De Saussure in passing three nights on the summit of the St. Theodul Pass and climbing the Breithorn.

The peculiar interest of these southern valleys of Monte Rosa to the geographer is the illustration they afford of the relations between topography and history. Their upper basins are inhabited by a population speaking an archaic German patois, who have up to the present day kept their local dialect, and costume, and usages intact, and have had their principal relations, not with Piedmont, but with Teutonic Switzerland and Germany. Thanks to the researches of some foreign students and of the Rev. W. A. B. Coolidge in this country, we shall soon be in a position to trace exactly the date and circumstances under which these colonies moved across the Alps—as the Ossetes moved across the Caucasus. We shall be able to realise the time when Zermatt was nothing but a summer station of flocks, and when the Saasthal was known as the Martinswald and was without permanent habitations. In gaining this new knowledge we must make up our minds to give up one picturesque legend—that of the establishment at Saas of a colony of the Saracenic freebooters, who infested the Great St. Bernard in the tenth century.

The authors of this volume point out that the construction of a railway in the Valle d'Aosta, and of a carriage road in the Val de Lys, must lead to the gradual disappearance of most of the local peculiarities of Gressoney, as well as of the northern connection of its population. They have therefore done their best to supply a trustworthy record of these features by a series of photographs and a suitable descriptive text, accompanied by specimens of the local dialect. The name Gressoney itself comes, they assert, from Kressen-au, the Cress-Meadow. They also furnish a topographical description of the crest of the Monte Rosa chain. The derivation of the name from Roesa, Val d'Aostan patois for glacier, has now been fully established. Up to 1840, writes Dr. Vallino, none of the summits of the group had separate names. Without endorsing the exact date, the statement is substantially correct; and it was a consequence that the name Dufour Spitze was applied to the loftiest summit by the Federal Staff, just as Mount Everest has been so named by the Indian Survey. The local name of the mountain has, however, in the case of Monte Rosa, remained that by which it is known to geographers.

Photography can hardly surpass in brilliant representation of nature Signor Sella's view of the ice-capped crags of the Lyskamm, with Mont Blanc floating in the air above its top, as seen from one of the peaks of Monte Rosa; and there are many views which illustrate, with a success that is altogether exceptional, the high mountain platforms—

"Where the white mists, for ever,
Are spread and upfurl'd—
In the stir of the forces
Whence issued the world."

PROCEEDINGS OF THE SOCIETY

FROM APRIL 1st TO JUNE 30th, 1890.

HUNDRED AND TWENTY-FOURTH MEETING

Of the Society, held in the Memorial Hall, Wednesday, April 2, 1890, at 7-30 p.m., Mr. Mark Stirrup, F.G.S., in the chair.

Mr. W. D. Pitcairn, F.R.G.S., addressed the members on "British New Guinea: its Geography, and the Manners and Customs of the Natives." (See p. 49.) The address was illustrated with a map, drawn by the Victorians, and collections of native work and curiosities, lent by Mr. G. C. Yates, F.C.S., and Miss Leech.

A hearty vote of thanks was given to Mr. Pitcairn, Miss Leech, and Mr. Yates, for the address and illustrations, to which Mr. Pitcairn responded, and replied to several questions.

A vote of thanks to the Chairman closed the meeting.

HUNDRED AND TWENTY-FIFTH MEETING

Of the Society, held in the Memorial Hall, on Tuesday, April 15, 1890, at 7-30 p.m., Professor T. H. Core, M.A., in the chair.

Mr. F. D. King, of Holy Trinity Schools, Bradford, Yorkshire, exhibited some sheets of a large map he is preparing for the teaching of the local geography of the West Riding of Yorkshire and part of East Lancashire, and several maps of Yorkshire, and addressed the members on "The Teaching of Local Geography." (See p. 82.)

The Rev. L. C. Casartelli, M.A., Ph.D., read a paper on "A People's Intuitive Museum for Brussels."

Mr. F. Zimmern gave some notes of travel to Delhi and back, which were illustrated by a number of lantern slides.

After considerable discussion, and very hearty votes of thanks to the readers of the papers, the meeting closed at a late hour.

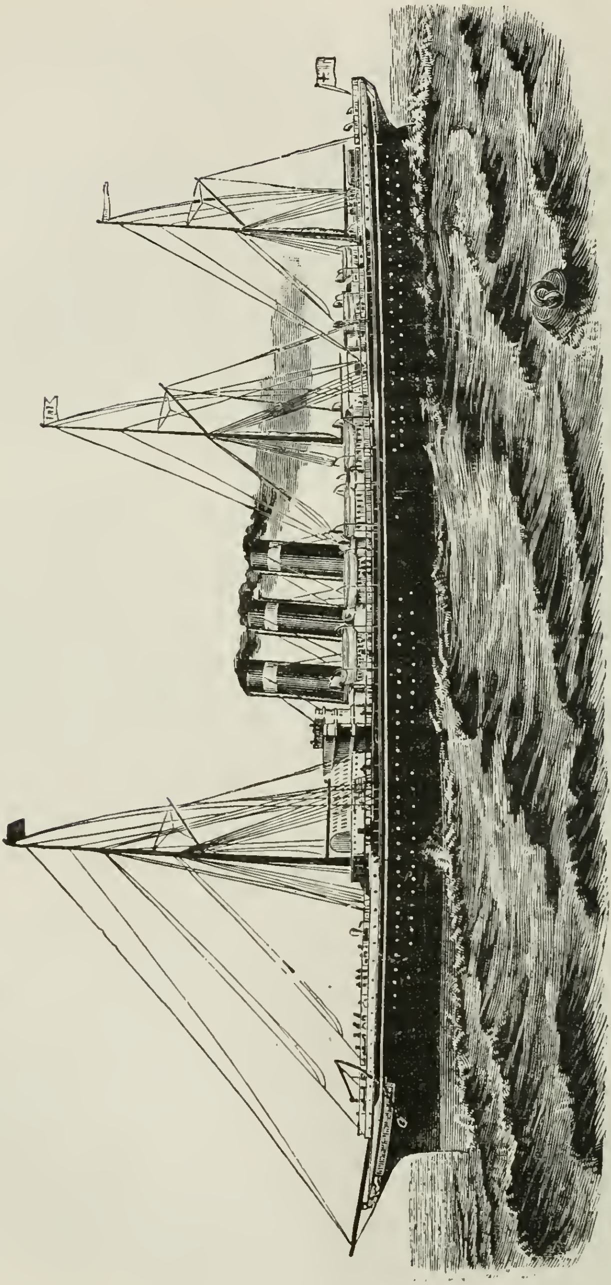
HUNDRED AND TWENTY-SIXTH MEETING

Of the Society, held in the dining-saloon of the s.s. City of New York, Saturday, April 26th, 1890, at 5 p.m., Mrs. Bosden T. Leech in the chair.

About two hundred of the members paid a visit to the Inman and International liner, City of New York. The party left Victoria Station by 1-30 p.m. train for Liverpool, thence to the Landing Stage and across the Ferry to Seacombe, and the members were received on board the vessel, lying in the Alfred Dock, Birkenhead, by Mr. Edmund Taylor, chairman of the company, Mr. D. R. Calvert, their representative in Manchester (through whose kindness the visit was arranged), and Captain Watkins and his officers.

A short account of this steamship will be of interest to the members. We may say, at the outset, that the Inman and International Steamship Company Limited was formed on the dissolution of the Inman Steamship Company (after the death of Mr. Inman), and they now possess a fine fleet of steamers, sailings taking place every Wednesday from Liverpool to New York.

INMAN LINE.



Twin Screw Steamers—City of New York and City of Paris, each 10,500 Tons.

The City of New York is 10,500 tons gross tonnage, and, with the City of Paris, has the distinction of being the largest passenger vessel afloat. Her engine power is equal to 18,000 horse power, with a speed of twenty knots an hour. Built at Glasgow, she was launched on the 15th March, 1888, and christened by Lady Randolph Churchill. She is made of Siemens-Martin steel, constructed on the most approved principles of modern shipbuilding, and can be converted into an armed cruiser, if necessary, her promenade deck being specially strengthened and arranged to carry fourteen 5in. guns of the swivel breech-loading type. The vessel is practically unsinkable, being divided into fifteen water-tight compartments. Even if two or three of them filled the ship would not be placed in danger, and her buoyancy could easily be trimmed—a very happy assurance for the passengers who make use of her in crossing the ocean. She has double bottoms, so that should she ground she would not be affected to any extent by the flooding of the holds. In leaving New York or Liverpool this space may be filled with water, if necessary, to the extent of 1,600 tons of water in a few minutes, sinking the ship deeper into the water and giving the screws a better hold, rendering her steadier and less liable to roll. Equal care has been taken to provide means of rescue should any casualty happen. There are no less than thirty boats, capable of carrying all on board when in regular sailings. She has five decks, the topmost, called the promenade deck, extending from stem to stern. The captain's rooms are immediately below the bridge. The dining-saloon, said to be finer than the dining-hall in any hotel in Britain, is capable of seating nearly three hundred persons, with a capital organ. The artistic adornments are very chaste, its white frame-work of wood, set with delicately-stained glass, producing a feeling of immense space artfully and artistically limited. For first-class passengers there is a drawing-room and a library, the windows of which are of stained glass and inscribed with quotations from "Poems on the Sea," that contains 800 volumes in all departments of literature. Similar accommodation is provided for second-class passengers.

Among the mechanical appliances to be found on board are included a powerful search-light—similar to those fitted on warships—capable of reflecting a brilliant ray sufficiently clear to enable the operator to discern a small object a couple of miles away. This is used at night for finding the buoys on entering the channels at the end of a voyage. The whole of the vessel is lighted with electricity. She is driven by twin-screws, and her engines are duplicated to guard against the possibilities of a break-down. Her length is 560 feet, width 63 feet, and depth 43 feet. She made her maiden voyage across the Atlantic 1st August, 1888. The fastest passage ever made from Liverpool to New York was accomplished by her twin-sister, City of Paris, in 5 days 19 hours 18 minutes, while from New York to Liverpool the City of New York took 6 days 3 hours 18 minutes.

In conclusion, we hope this magnificent vessel may go on—

> "Triumphing, while still the smiles
> Of summer tremble on the water's breast,
> Thou shalt be greeted by a thousand isles
> In lone wild beauty drest."

After being shown round the vessel the party adjourned to the dining-saloon, where tea was served, after which the members held a meeting, presided over by Mrs. Bosdin T. Leech.

The Secretary (at Mrs. Leech's request) called upon Alderman Bailey, one of the promoters of the Ship Canal, to propose a vote of thanks to the gentlemen who had so hospitably entertained them, and observed that, although it might be a very long time before they would see a vessel like the City of New York coming up to Manchester, they hoped to see some steamers coming that way before long.

Alderman W. H. Bailey, in moving a vote of thanks to the Inman and International Company, said Sancho Panza's opinion was that when a man got what he wanted he wanted nothing more, and if he wanted no more there was an end of the matter; but it was only doing justice to their feelings in putting heartily this vote of thanks especially to Mr. Taylor and to Captain Watkins, for the opportunity of forming some acquaintance with the internal arrangements of such a ship, and also for the hospitality extended to them. Something like one hundred years ago, Wilkinson, a Lancashire engineer, made the first iron boat; and that a ship like this they had seen to-day, of such mass and volume, could be propelled by its own force across the ocean was a greater triumph of human intellect than the ancient world ever dreamed of. They regarded every improvement in steamships as a benefit to the whole country, because it was a means of developing trade with the rest of the world. They regarded their sailors with just pride, feeling that in seamanship they were quite as brave and as bold as the Drakes, Hawkins, and Frobishers of three centuries ago, and as a splendid example before them they had only to recollect the ability—the cool skill and seamanship—shown by Captain Watkins, after the mishap to the City of Paris, to prove this. We, as members of the Manchester Geographical Society, could not do very much without ships, and the progress of civilisation owed much to the great influence of steam. He begged to move, "That the best thanks of this meeting be given to the gentlemen who had so heartily entertained them."

Councillor F. Smallman seconded the motion, which was supported by County Councillor Higham (of Accrington), Mr. W. Bottomley, J.P. (Stalybridge), and Mr. W. C. Freeman (of Leigh), who expressed the pleasure it had given him and his friends from Leigh to have had the opportunity afforded them of going over such a famous ship that afternoon. It had indeed been to them a rich treat, and the outing had been a thoroughly enjoyable one.

Captain Watkins, in a brief speech, returned thanks for the kind words and kind wishes that had been mentioned by the various speakers, and expressed the pleasure it had given his officers and himself in taking them over the vessel.

A vote of thanks (moved by Mr. Shaw and seconded by Mr. Bowes) to Mrs. Leech for presiding brought this most enjoyable outing to a close.

COPE'S TOBACCO WORKS.

In the morning about twenty-five members visited Messrs. Cope's tobacco manufactory, and were very much interested to see the various processes of the manufacture of cigars, cigarettes, tobacco, and snuff from the leaf. The large number of females, looking happy and healthy, was remarkable. The members were very glad to have the opportunity of visiting these works, and were pleased with the courtesy of their reception.

HUNDRED AND TWENTY-SEVENTH MEETING

Of the Society, held in the Library, on Tuesday, April 29, 1890, at 7-30 p.m., Mr. B. O'Connor in the chair.

The election of the following members was announced:—

Ordinary: Messrs. Councillor J. Brooks, J. N. Carter (in lieu of Mrs. Carter), William Cheetham, T. W. Foxcroft, Moritz Frank (in lieu of Associate), F. A. Frey, W. M. Greaves, J. D. Hague, C. J. Hurst, Robert Kirkpatrick, L. B. Lee, Councillor Wm. Lees (mayor of Stockport), J. L. Leigh, Jos. Lieben, W. C. Lord, John Norris, John Pearson, A. Richardson, Jas. Robertshaw, Alderman B. Robinson (mayor of Salford), Charles Sever, H. Siegler, Joseph Stocks, and T. W. Wrathmell.

ASSOCIATE: Mrs. Inman, and Messrs. F. Fearnley, John Jones, J. B. Midgeley, jun., Henry E. Storey, Paul von Tscharner, and the Rev. J. Wood, B.A.

A number of presentations were announced, and the following letters read:—

LORD NAPIER OF MAGDALA.

"The Lees, Folkestone, Kent.

"My Dear Sir,—The Dowager Lady Napier of Magdala desires me to express her heartfelt thanks to the Manchester Geographical Society for the very kind letter of sympathy which you have favoured her with from the Society. The blow has been a crushing and unexpected one, for my dear father seemed to have years more of strong life in him; but the sympathy expressed by all around, such as that which you convey, has been a great consolation to her, and to the family in general.—I am, my dear sir, yours faithfully, (Signed) "NAPIER OF MAGDALA."

MRS. HUTTON,

"Victoria Park, April 16, 1890.

"Dear Sir,—Will you please convey to the members of the Geographical Society my heartfelt thanks for their sympathy with me and my family in the great sorrow which has fallen upon us? I value much the appreciation of my husband's services to the Society, as expressed in the resolution forwarded to me by you.—Believe me, yours faithfully, (Signed) "A. HUTTON."

MRS. GRAFTON.

"London, W., Feb. 28, 1890.

"Sir,—May I request you to convey to the members of the council of the Geographical Society of Manchester our sense of their sympathy with me and with my children in the great sorrow that has come upon us, and our best thanks for the kind letter we received from them through you?—I am, sir, faithfully yours,

(Signed) "EMILY GRAFTON."

MRS. CLARKSON JOHNSON.

"Ebor Villas, Broughton Park.

"Mrs. Clarkson Johnson and her children desire to thank the Council and members of the Geographical Society for their vote of condolence, and for the sympathy expressed to her and her children through Mr. Sowerbutts."

The following papers were read:—

"Souvenirs of "My Sojourn with Emin Pasha," by Dr. Zucchinetti; Captain Binger's "Travels from the Niger to the Gulf of Guinea," from the Paris Geographical Society's Bulletin; "An Historical Note on the Portuguese in East and West Africa;" "A Note on the Newfoundland Question, Geographical, Historical, and Piscatorial," by the Secretary.

A lively discussion ensued on the conclusion of the papers.

The death of Mr. Mackay, the engineer missionary at Lake Victoria, having been reported by the Secretary, a resolution of condolence was proposed and carried, and was directed to be sent to the Church Missionary Society.

HUNDRED AND TWENTY-EIGHTH MEETING

Of the Society, in the Memorial Hall, on Friday, May 16, 1890, at 7-30 p.m., the Rev. L. C. CASARTELLI, M.A., Ph D., in the chair.

The members of Chambers of Commerce in the district had been invited to this meeting.

Mr. W. Y. **Campbell**, the hon. vice-president of the Witwasersrandt Chamber of Mines, being on a short visit to this country, addressed the members on "The Transvaal: its History, Geography, Progress, and Mineral Wealth." (See p. 85.)

The address was illustrated with four large maps by Mr. Campbell, and Messrs. Donald Currie and Co., of the Castle Line, presented to the members 150 handbooks of South Africa, with views and a capital map.

Questions were asked by several members, and replied to; and Mr. **Belisha** having made some remarks on the various goldfields, votes of thanks to Mr. Campbell, Messrs. Donald Currie and Co., and to the Chairman brought the meeting to a close.

HUNDRED AND TWENTY-NINTH MEETING

Of the Society, at the Nadin Reservoir House, and at the Chapel House, Ashworth, on Saturday, May 17, 1890.

The members were driven in carriages from Heywood to the Ashworth Valleys, and rambled through them to the Chapel House and the reservoirs of the Heywood Corporation. Photographs were taken, and the geology and botany of the Valleys, the folklore and local literature, were duly dealt with. Tea was served at the Chapel House and at Nadin, and very hearty votes of thanks were passed to Mr. Councillor Buckley, Mr. Diggle, the engineer, the Corporation, Mr. Booth, and all those who had contributed to the enjoyment of the day.

HUNDRED AND THIRTIETH MEETING

Of the Society, in the Library, on Tuesday, May 20, 1890, at 7-30 p.m., Mr. W. **Johnson** in the chair.

The election of the following members was announced:—

Ordinary: Mrs. Croasdale, and Messrs. G. F. Brammer, W. H. Buckley, Rev. J. A. N. Hibbert, Fred Hilton, Siegfried Jaffé, Frank Jefferies, J. M. Jones, J. E. Richardson, Wm. Robinson, E. Ward, and S. T. Woodhouse.

Associate: Messrs. John Fielden, Wm. Hodgson, Edward Isherwood, Thomas Pearson, and Isaac Thompson.

Honorary: Colonel Sir Francis de Winton, R.A., K.C.M.G., F.R.G.S., &c.

A number of presentations were announced and the following letters read:—

MR. H. M. STANLEY.

"34, De Vere Gardens, W., 16th May, 1890.

"Dear Sir,—I have to return you my best thanks for your letter and for the published *Journals of the Manchester Geographical Society* you are so good as to send me, which I shall read with interest as soon as I can find a spare moment.—Yours faithfully, (Signed) "**Henry M. Stanley.**"

CHURCH MISSIONARY SOCIETY.

"London, May 2/90.

"Dear Sir,—I am directed to thank you for your letter of yesterday's date, forwarding a resolution of the Manchester Geographical Society expressing sympathy on the death of our devoted Uganda missionary, Mr. Alexander Mackay, and to inform you that it will be read before committee on the 12th instant.—I am, &c.,

(Signed) "**J. E. Duncan.**"

A paper by Mr. A. Cook, Sandakan, British North Borneo Company, on "The Recent Development and Exploration of British North Borneo," was read (see p. 63). The paper was illustrated by a large map.

A series of letters on the Shan Country—notes of a journey by the Rev. Dr. J. N. Cushing—were read and commented on.

HUNDRED AND THIRTY-FIRST MEETING

Of the Society, at Hebden Bridge, on Thursday, June 12, 1890, Mr. Councillor Roper in the chair.

The members were driven in carriages from Hebden Bridge, past Heptonstall, to the ridge, where lunch was served, and to the foot of the Widdop reservoir of the Halifax Corporation. After inspecting the works the drive was resumed through the woods of Lord Savile, past Hardcastle Crags, and back to Hebden Bridge. The weather was fine, and a pleasant and very profitable day was spent, the woods being in their best and most glorious dress.

HUNDRED AND THIRTY-SECOND MEETING

Of the Society, in the Free Trade Hall, on Friday, June 20, 1890, at 8 o'clock p.m., Mr. S. Ogden, J.P., in the chair.

This was a joint meeting of the Manchester Athenæum and of this Society, and was presided over by the president of the Athenæum, who is one of our vice-presidents. Every seat was occupied, and the meeting was very brilliant.

Mr. H. M. Stanley, who was accompanied by Mr. William Bonney and a Zanzibari, addressed the meeting on "His Recent Journey Through Africa."

The Rev. S. A. Steinthal moved a vote of thanks to Mr. Stanley for his address, which was seconded by Mr. Henry Lee, J.P., a vice-president, and president of the Manchester Chamber of Commerce, and carried by acclamation.

HUNDRED AND THIRTY-THIRD MEETING

Of the Society, held in the Memorial Hall, on Thursday, June 26, 1890, at 6-30 p.m., Mr. S. Ogden, J.P., in the chair, and on his retirement Mr. J. Irlam.

The Chairman's annual address was read by the Secretary (see page 92).

Mr. Wm. Stanley exhibited a very beautiful collection of views of old halls near Manchester, and described them.

The Victorians and their friends gave a series of reproductions of statuary, the groups round the Albert Memorial, and others, which were very gracefully reproduced.

Music and refreshments were provided, and after votes of thanks the meeting closed.

THE FIFTH ANNUAL MEETING

Of the Society, held in the Library, Brown Street, at three o'clock, Friday, July 25th, 1890, the Rev. S. A. Steinthal in the chair.

The minutes of the last Annual Meeting, having been read, were approved.

The Chairman's annual address which had been given at the last meeting of the Society, is herewith presented.

THE ANNUAL ADDRESS OF THE CHAIRMAN OF THE MANCHESTER GEOGRAPHICAL SOCIETY, DELIVERED TO THE MEMBERS IN THE MEMORIAL HALL.

It is one of the duties of the Council of the Manchester Geographical Society to present to the members a summary of the chief events of interest connected with the progress of the science it was established to cultivate, and based upon the notes prepared by the secretary,* a survey of this character is now laid before the Society.

In connection with the great Paris Exhibition special attention was paid to the present condition of geographical knowledge. A most admirable collection of maps, of books dealing with geographical science, and of models was prepared, throwing light not only on the configuration of the earth's surface but giving a vast amount of information on ethnology, and on the various productions of the globe, thus displaying the commercial advantages to be derived from geographical study. But while thus prominently dealing with the cosmopolitan aspect of our science, the Exhibition illustrated, with rare completeness, the accuracy with which the study of France itself and its dependencies had been pursued, and materials obtained to enable the national resources and advantages to be developed and made known. Most striking is the attention which is shown to the record of all matters relating to municipal details, especially of the city of Paris. The maps and models which describe its topography, its water and gas supply, its system of drainage, are all utilised in elaborate treatises, giving statistics, with accounts of hospitals and schools, of civil government, and police. A study of the materials thus provided, with admirable completeness and characteristic lucidity, would be in itself a valuable education. In connection with the Exhibition there was a special Geographical Congress, of which our proceedings give a report, presented by our representatives on their return from Paris.

While speaking of France it may be fit to mention the valuable explorations and discoveries of M. Martel in the Cevennes, and it is hoped that Mr. Mark Stirrup, F.G.S., one of the most active members of our Council, will favour the Society by again exhibiting the valuable photographs of the head waters of the Lot and the Garonne, with their caves and water sculptures, which he has personally examined.

A geological map of France, in about sixty sheets, has lately been completed by the Government of France.

Our own Government is actively engaged in revising the Ordnance Survey, so that we may hope before long to have maps of our own large towns which shall fairly represent the numerous changes they have undergone since the publication of the original survey.

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* The Geographical Journals, Whitaker, and The Statesman's Year Book, were largely used in the compilation of the notes, and may be referred to for details.

In Asiatic geography the chief achievements to be noted are those attained by Russian travellers, who have explored much of the hitherto unknown country of Central Asia. Prejevalsky, while endeavouring to add to the brilliant work he had already accomplished, died on November 11th, 1888, at Karakol, a small town on Lake Issik-Kul, within the Russian territory. But his companion, Colonel Pyevtsof, continued the expedition, and having wintered at Nia is supposed to be endeavouring to cross the mountains into Thibet. Another Russian explorer, M. N. A. Notowich, is on his way to Thibet from Eastern Turkestan. Mr. Rockhill, an American, vainly attempted to reach Lhassa in disguise, but being discovered he was compelled to return to China. Though he was not able to carry out his plans completely, he has added much to the knowledge, still so scanty, of this region. What the results of M. Martin's (a French traveller) journey to Thibet, or of Captain Grombchowski's expedition to the Altyn-Tagh, will be we cannot yet say. Dr. Joseph Troll spent the winter in Chinese Turkestan, and leaving Yarkand in May crossed the Karakorum Pass, and reached Ladakh in June, exploring the upper Indus. Lieutant Younghusband and Captain Durand have been exploring the passes of the Himalayas and the Hindu Kush north of Kashmir, and the Royal Geographical Society has awarded its gold medal to the former, as an acknowledgment of the additions he has made to the geography of this district. Unfortunately the results of these journeys are not accessible to the public, as the Indian Government treats the reports as state papers.

Colonel M. S. Bell has for seven years (1882-9) been exploring the various passes which lead from Armenia to China across the mountain ranges which divide Southern from Northern Asia, with results which will no doubt be beneficial to commerce in future days. M. Bonvalot, with Prince Henry of Orleans, is engaged in the arduous task of crossing the whole of Asia from Russia to Tonking. When last heard of they were at Kulja, and were about to enter the mountainous regions from which the great Chinese rivers take their rise.

Captain Cupet, in the beginning of the year 1889, explored a road between the Upper Mekong and Annam, and the Songka, or Red river, has for the first time been navigated by steamer up to the Chinese province of Yunnan.

Dr. Schweinfurth's visit to Yemen did not add much to geographical knowledge, but its result was in so far valuable as it showed that the inhabitants were hospitable and that slight risk was incurred while travelling in Arabia.

The Caucasus has been very thoroughly explored by Mr. Freshfield, with Mr. C. F. Dent, Mr. Woolley (a member of our society), Captain Powell, and four Swiss guides. The main object which these travellers had in view was to discover traces of Messrs. Donkin and Fox, who had been lost in 1888. The expedition was successful in so far as it found what must have been the last camping place of the unfortunate travellers, from which they had attempted the ascent of Dykh-Tau (16380ft.). Though the bodies have not been recovered, the evidence of no foul play having taken place was couclusive. Mr. Woolley was successful in reaching the summit of Dykh-Tau and several other peaks. Messrs. Vittorio and Erminio Sella were also successful in ascending Elbruz, and were able to secure some of the finest photographs of mountain tops and cloud scenery ever obtained.

As usual, the work done in Africa has exceeded in interest all that was accomplished elsewhere. In the territory of the Imperial East African Company, Mr. J. R. W. Piggott has traced the River Tana well-nigh to Mount Kenia, and then proceeded southward by routes hitherto unexplored by Europeans to Mombassa. Dr. Hans Meyer was brilliantly successful in his endeavours to ascend Kilima Njaro. He has displayed, in his persevering attempts, a courage and endurance which secure him high rank even among the illustrious band of African travellers. The Zambezi and the countries adjoining its basin have been the scene of much activity during the year, the Portuguese displaying something of the zeal which made their name illustrious in the early history of African discovery; but, after all, the greatest achievements were made by English travellers. Mr. Rankin has explored the Chinde mouth of the Zambezi. It has been disputed whether the channel he claims to have discovered has not been previously known, but it is certain that he has succeeded in proving it to be navigable by vessels of four to five hundred tons burden. For the geography of the Upper Zambezi science is deeply indebted to Mr. F. S. Arnot (the missionary) and Mr. Selous, the former having explored the whole country from the Transvaal and the territory of Bamangwato, the north east of the Kalahari desert and the river Botletle, which in the rainy season flows towards the east into the salt marshes of Ntwétéwe, and in the dry season west to Lake Ngami; and having traversed the Barotse territory visited the Portuguese settlement of Angola, and then retraced his steps to the Zambezi. In July last he returned to the Garenganze country and to Chitambo, the village where Livingstone met his death—having successfully prepared the way for the missionaries in whose work he is so deeply interested. Mr. Selous has followed the Upper Zambezi into the Marutse Mabunda country, and to the south into Bamangwato, and last May undertook a journey into Mashonaland, a preliminary to further journeys.

Mr. Delcommuni, an officer of the Commercial and Industrial Society of the Congo, has added greatly to our knowledge of the tributaries of that great stream, having explored the Kassai and the Ovalunna, and Lake Leopold II., which is its reservoir. Besides he has traced the Lulua and the Sankuru, and the Lomami, which he has succeeded in distinguishing from the tributary to the Sankuru of that name, having navigated it for over 577 miles to about the spot where Commander Cameron crossed it.

In the French Congo district M. Crampel has explored a large amount of territory hitherto untraversed, and has laid down, by compass observations, a track of over 1,302 miles of hitherto unexplored country. He has traced a large part of the course of the Ivindo, one of the tributaries of the Ogowé, with several of its affluents, the names of which are all new to the map of Africa. He also met with the pigmy race known to him as Akka.

Captain Kund has again tried to penetrate into the interior of the German Cameroons, and has found the native population actively hostile. He reached the upper part of the river Niger, where, at the village of Zonon (3° 48′ N. lat. and 12° 20′ E. long.), he left his companion Lieut. Tappenbeck. Unfortunately, Lieut. Tappenbeck's name must be added to the many martyrs of African travel. Captain Kund has obtained a large amount of ethnological information during his researches. He has met with undersized races, of great courage and audacity, who are, in some respects, akin to the Bushmen of South Africa.

Dr. Zintgraff's journeys have also been in the Hinterland of the Cameroons, ascending the river Benue to Ibi, and surveying a district hitherto left blank on African maps.

Captain Binger has finished a two years' exploration of the upper waters of the Niger; beginning at Bamaku, on the Joliba, he traversed Mosi, Salaga, and Kong, and finished his journey at Grand Bassam, on the Ivory Coast, on the 20th March, 1889. The French geographical journals are justly proud of the achievements of Captain Binger, who has opened, it is believed, a vast territory to those who will follow his steps and adopt the conciliatory spirit by which he made himself friends all along his route.

Much information has been obtained on the geography and social condition of Morocco by Mr. J. Thompson and Lieutenant Crichton Brown, as well as by Mr. L. B. Lee and his brother. We have to regret the death of M. Camille Douls, the well-known and distinguished French explorer of the Western Sahara, who had left Tangiers in August, but was killed soon after passing Tafilet.

All these additions to our knowledge of Africa are no doubt of great importance, but they failed to call forth the interest which was directed to the Emin Pasha relief expeditions of Dr. Peters, and especially of Mr. H. M. Stanley. Dr. Peters penetrated by the Tana river through the Masai lands to Uganda. Frequent reports as to his death reached Europe, but we are glad to say that though he was not able to reach Emin Pasha, he has been able to return to the coast in safety, and the report of his adventures is looked forward to with great interest. Stanley has, however, accomplished the task he undertook. It is unnecessary to summarise here the tale which our most distinguished member can tell so much more satisfactorily, and with which you all will be familiar by the time this summary can be read by you. Let it suffice to record the discovery of the vast forest, the rectification of the outline of Lake Victoria Nyanza, and the startling announcement that in Mount Ruwenzori and the chain of mountains over which it rears its snowy peaks, we have at last fixed those Mountains of the Moon, of which ancient geographers have told such strange discordant tales. No story can exceed in interest the account of the arduous struggle against physical and moral obstacles which in his journey from Yambuya on the Aruwimi, which he left on the 20th June, 1887, till his arrival at Bagamayo on the 5th December, 1889, Mr. Stanley, with unexampled heroism, met and overcame, with the assistance of his gallant companions, Captain Nelson, Lieutenant Stairs, Mr. Jephson, and Dr. Parke. We join in the universal sorrow which laments the deaths of Major Barttelot and Mr. Jamieson and the invaliding of Mr. Rose Troup.

Though it is not strictly a geographical occurrence, the granting of royal charters to two great British trading companies cannot be overlooked, as the establishment of the East African and South African Companies, together with the progress which German and Italian enterprise are making, promise noteworthy advances in our knowledge of the great African continent.

Crossing the Atlantic, we rejoice in the progress made in the survey of the north-west territories of Canada by the Survey Department of the Dominion under the superintendence of Mr. G. Devile and Professor Selwyn, and welcome the valuable information contributed in the papers of Messrs. G. M. Dawson, Fawcett, Ogilvie, Tyrell, M'Connell, and Bell.

Lord Lonsdale left Winnipeg in March, 1888, and plunged into the unknown regions to the north-west, worked his way to the shores of the Arctic Seas, and thence travelled to the Pacific Coast, reaching Alaska in February, 1889, after many trying privations and dangers. A similar journey was undertaken last April by Mr. E. W. Everest and Count de Sainville, who left Winnipeg with the intention of exploring the Arctic coast from the Mackenzie mouth to Behring Strait. The result of their journey is anticipated with great hopes.

The vast area of the United States is being carefully surveyed under Government auspices by their officers, by the members of the Geological Survey, and the Signal Department of the United States army. One-half of the work has been already issued on a scale of 1-125,000, or on about half the scale of our one-inch Ordnance maps. A larger map than this is in preparation, and has been published for nine or ten states. The boundary between Alaska and the British north-west territories is being carefully surveyed by Mr. J. E. M'Grath, and the result will show whether Mount St. Elias is on British or United States territory.

The controversy as to the true source of the Mississippi river has been investigated by Mr. J. V. Brower, who has refuted Captain Glazier's claims to have traced it to what he called Glazier's Lake, and the old claims of Lake Itasca as the true course have been re-established and confirmed.

In South America M. Chaffajon has completed his journey to the head-waters of the Orinoco, and is at present engaged in exploring the Goajira peninsula.

M. Coudreau has most successfully completed the mission entrusted to him by the French Minister of Public Instruction in exploring the mountains of Tumuc-Humuc, in the extreme south of French Guiana, and has obtained a varied mass of geographical, anthropological, and meteorological information, as well as valuable collections of the fauna and flora, which the adventurous traveller has brought home. He has also secured the elements for the complete study of two important dialects—the Tupi and the Caribbean.

Col. A. P. Labre has explored the central district of South America lying between the Madeira and the Parana, and our society is indebted to Consul Guillaume, of Southampton, for an excellent paper on this journey, together with an admirable map illustrating the same.

Dr. P. Ehrenreich has returned from Cuyaba, descending the Tocontins, while Dr. A. Heltmar has since 1888 been occupied in exploring North Peru.

In Australasia several important additions to our geographical knowledge have been secured. Right in the centre of the Australian continent Mr. Willshire discovered an active volcano, between 150 and 200 miles north-west of Alice Springs, and Mr. David Lindsay, who has crossed the continent from Dalhousie on Lake Eyre to the Gulf of Carpentaria, confirms the discovery. According to Mr. Lindsay the natives call the mountain "the ever-burning hill." Mr. Tietkins has been exploring the regions north of Lake Amadeus, while Mr. H. Y. L. Brown, the Government geologist, has obtained several valuable results by his examination of the Musgrave mountains. In North and North-west Queensland, Mr. A. Weston, for the Government, and Mr. A. J. Vogan, for the Royal Geographical Society of Australia, have been exploring districts hitherto undescribed. Professor Lumholtz has completed his travels in Queensland, and has unpleasantly startled us by his vivid description of the cannibalism of the natives, while giving most valuable information as to the geology, the fauna, and flora of the country.

Professor Haddon, Captain Douglas, Dr. Guppy, Mr. Basil Thompson, and Mr. W. D. Pitcairn have made excursions to the islands extending from Java to New Guinea, the Louisiade Archipelago, and North Queensland, and while greatly enlarging our knowledge of the geography of these districts, have also added to our knowledge of their geology and natural history.

Sir W. Macgregor has ascended the peaks of the Owen Stanley Range (so-called after the commander of the Rattlesnake, who explored this country in 1846-50, with Professor Huxley as his medical officer), in New Guinea, and has named the highest point, 13,121 feet above the sea level, Mount Victoria. He found in the northern valleys of the range a numerous and settled population. An interesting *resumé* of this journey has been given to the society by Mr. J. Thompson, F.R.G.S.A. of Brisbane, illustrated by a capital map of the district.

It is only just in this connection to refer to the botanical researches of Dr. E. Hellwig in the neighbourhood of Finsch Haven, and in German New Guinea.

The chief features of North Polar exploration are to be found in the journeys of Messrs. Kükenthal and Walter to Spitzbergen, and of Mr. Nansen's successful expedition across Greenland. Mr. Kükenthal was sent out by the Geographical Society of Bremen, together with Mr. Walter, and these gentlemen have been able very considerably to correct the charts of the coast of Spitzbergen and the neighbouring islands, and have marked them with valuable soundings and observations as to currents. The vessel in which they started, the Beratine, was unfortunately wrecked, Another whaler, the Cecilia Malene rescued them, and on board of this they were able to continue their investigations successfully.

Mr. Nansen's extraordinary achievement in crossing the vast glaciers of Greenland will long be remembered and its details carefully studied. He has successfully overthrown the opinion maintained by some geologists that so vast a country as Greenland could not be entirely covered by glaciers. His intended attempt to reach the Pole itself will be watched with the deepest interest, and hope that so intrepid and energetic a traveller will not fail, and if daring and perseverance can make success possible, where so many have been overcome by the force of Nature, he will succeed.

This hurried summary of the practical work of geographical research fails, no doubt, in even naming all that has been done by the persevering energy of those to whom the world is indebted for a knowledge of its own conformation, its inhabitants, and products. The work is too wide to be comprised within our brief limits. But the results of all this self-sacrificing enterprise would be lost if they were not made known to society and their value made practical by educational appliances. Our country is only slowly awakening to the importance of the study of Geography.

The Royal Geographical Society for a long period was the only scientific institution in the country which recognised its value. We can now claim that it has several sister associations promoting the study, and among them may put forward the work done by our society as not without its well-marked influence. Our Journal is welcomed abroad as well as at home, and its interesting character is largely due to the devoted zeal of the Editor and his able coadjutors, best known to us under the name of the Victorians. It is only fair, while speaking of these gentlemen, to mention the valuable assistance they have often given to us by illustrating the evening addresses by their specially-prepared maps ; and to refer once more to the disinterested work done in lecturing and all other practical ways by Mr. Sowerbutts, without whose activity it can be asserted our Society would neither have come into existence nor have accomplished the work it has done.

It is gratifying to see that the great national Universities of Oxford and Cambridge have appointed professors or readers on our science, and have included it in their extensive schemes. It is, however, a matter of special regret to us in this district that the Victoria University has not yet been called upon either to recognise such appointments at any of its Colleges or to include the subject in its extension plan.

The Chambers of London and of Manchester have both made Commercial Geography part of their schemes of examination, entitling those who pass in it, with other branches, to certificates ; and our society is itself engaged in preparing plans for promoting geographical study in elementary and evening schools.

The Report of the Council to the members and the year's Balance Sheet (having been duly audited by Mr. Gregory and Mr. Aldred) were read as follows :—

ANNUAL REPORT.

In very many respects the Council feel that their Annual Report to the Geographical Society is a more cheerful and hopeful one as to the future than they have been able to lay before the members in previous years, while in respect to the work done its record is as good as in former sessions. The roll of members has been very materially increased, 113 ordinary, 36 associate, and 7 corresponding members having been added to the list. On the other hand we have to deplore a very heavy diminution owing to death. During the year we have lost Mr. John Slagg, one of the founders of the Society, Mr. Alderman Goldschmidt, one of its trustees, Mrs. Roby, one of the members of its Council, and twelve others, whose places it will be difficult to fill. The services rendered by these friends have been duly recognised by special resolutions sent to their bereaved representatives. Though the death of Mr. Hutton occurred since the year 1889, his great services to the Society make it impossible to pass over the loss you have sustained in his decease without this note. The resignations have been 45. The Council are glad to be able to report that the list of members which, at the close of the year 1888, numbered 695 now stands at 801. Though this increase is pleasing, it is not yet satisfactory, as till the Society has a roll of 1,000 members its means will not be sufficient to do justice to the claims made upon them. It is also to be regretted that there are very many of the annual subscriptions in arrear, and though the great majority of these are perfectly safe, yet it would greatly aid the economical management of the Society if members would not cause the officers to make repeated application for their contributions.

The Balance Sheet shows that although there have been extra calls upon the treasurer during the twelve months for the publication of the Journal, which covered a year and a quarter's issue, and a very large number of meetings, the year's income has exceeded the expenditure. The Council is altogether unable to say how greatly the members are indebted to the Secretary for the work he has done since the establishment of the Society. Without his enthusiasm and energy it would never have gained its present high position. The debt, which has been so grievous a burden to active work, is now reduced to a very small amount, and if a slight effort only is made will soon be altogether cleared off, and if the arrears which have been already named are collected, a satisfactory financial basis for future operations will be secured.

The number of meetings held during the year 1889 was 33, and from January to July, 1890, was 20, making in all 53. The following list will show the varied character of the papers, &c. :—

EUROPE.

Athens and Neighbourhood: Messrs. Pingstone and Sankey. Sea of Azov: Rev. A. Colbeck. From Newcastle to the Yenesei. The Great Cave of Adelsberg. The Snowline of the Tatra Mountains: M. K. Grissenger. A Spring Ride in Southern Spain. The Hardy Norsemen: M. Du Chaillu. Duke Frederic and Bremen.

ASIA.

The Rival Routes to China: Mr. Holt S. Hallett. The Coins of China: Consul Gardner. Peking and the Pekingese: Rev. G. Owen. Floods in China: Chinese Embassy. Formosa: Mr. Rippon. Notes of Travel from Shanghai to St. Petersburg: Mr. J. M. Molesworth. The Necessary Extension of Indian Railways for the Development of British and British Indian Trade: Mr. Holt S. Hallet. The Decree for the Great Chinese Railway. Siberian Trade: Mr. H. N. Sullivan. Chinese Chess.

AFRICA.

Fernando Po: Rev. T. Parr, M.A. East Africa: Rev. L. Scott (Views). Congo: Mr. R. C. Phillips (Views). El Senoussi and the Mahdi. The Island of Lukoma: Archdeacon Maples. Morocco and the Moors: Mr. J. Thomson. The Cape Colony, Transvaal, &c.: Mr. W. Ashman. Mashonaland: Mr. F. C. Selous. The Manners, &c., of Congo Natives: Mr. R. E. Dennett. Nyassa: Capt. Lingard. Nyassa: Mr. F. Moir. The Portuguese Possessions in Angola, &c.: Mr. J. Rippon. Charter of Incorporation of British South African Company. Cotton Interests in Gold Coast, &c.: Governor

Moloney. Melodies of Natives of West Africa: Governor Moloney. Lagoons of the Bight of Benin: Mr A. Millson. In Tropical Africa. Swaziland. Italian Interests in Africa.

AMERICA.

Florida and the English: Mr. A. Montefiore. The Creation of New Counties in Northern Minnesota: Mr. A. J. Hill. Recent Travels in Peru and Bolivia: Chevalier H. Guillaume.

AUSTRALASIA.

Taranaki, New Zealand: Mr. R. H. Gibson, B.A. Meteorology in Queensland: Mr. C. L. Wragge. Australia, Curiosities of: Mr. W. Ashburn. Leprosy in the Sandwich Islands.

SOCIOLOGY.

The Effects of Manufacturing Processes in Relation to Health: Dr. Arlidge. The Manners, Customs, and Superstitions of the Congo Natives: Mr. R. E. Dennett. The Melodies of Gold Coast Tribes: Governor Moloney. Chinese Chess. Halifax Waterworks and the Hebden Valley: Councillor J. Foster.

EDUCATION.

Teaching of Commercial Geography in Primary and Secondary Schools, &c.: Mr. J. H. Silberbach. Teaching of Geography with New Appliances. Teaching of Commercial Geography and the Value of School Museums: St. Bede's. Yorkshire Union of Mechanics' Institutes: Report of Delegate. British Association: Report of Delegate. Sir F. de Winton's Address on Commercial Geography at the British Association. What Geography Ought to Be: Prince Krapotkin. The Geographical Distribution of Plants: Mr. L. H. Grindon. Geography: Mr. C. Marvin.

VISITS.

Owens College Museum—Geology in the Museum, Coalfields, and Industries: Prof. Boyd Dawkins. Technical Schools, Princess Street and Peter Street—Cotton, Metal, Chemical, &c., Industries. Ardwick Museum—Local Natural History, Geology, &c., &c. General Post Office—Letter Communication, Telegraphy, and Administration. St. Bede's College—A Model School, Commercial Museum, Treasurer of the Library, &c. Accrington, Whalley, Mytton, Stoneyhurst, Longridge, Preston. A View of the Uplands and Valleys of the Northern Part of the County; Historical and Ecclesiastical Remains; County of Great Interest, Geologically and Historically; a Great Educational Institution; Valuable Library, Astronomical Works of Value, Photography, the Daily Sun Spots, &c., &c. The Congress of Geography in Paris (See Special Report). The Exhibition, Paris, &c., &c. Botanical Gardens: Address by Mr. L. H. Grindon.

The thanks of the members are due to all the friends who have so ably contributed to the meetings.

The Council have continued this year the arrangements for excursions of the members to places and objects of interest in the neighbourhood, and have sent deputations to various meetings, among which must be specially mentioned the Congress of Geographical Societies held in Paris, on which a report was presented by the secretary.

It would be unfair to pass over the special work done by the Victorians, the most energetic working members of the society. To their labours we are indebted for the careful analysis of the contributions of foreign societies to geographical science which form so valuable a feature of our Journal, and the preparation of maps in illustration of lectures and papers read before the society. They have now undertaken the preparation of lectures to be addressed to popular audiences whereby the study of geography will be cultivated in places which the society could not otherwise reach. The Council gratefully record the obligation which they, in common with all the members of the society, owe to these gentlemen.

Very considerable additions have been made during the year to the library. The proceedings of foreign societies received in exchange for our Journal, the generous gifts from colonial and foreign governments and municipalities at home and abroad, and private donors, have all been duly acknowledged. The members are, perhaps, unaware of the rich storehouse of geographical knowledge which they have the right to use. Unfortunately the society's means do not allow a proper display of the books and maps it possesses. When Manchester does greater justice to the claims of the Geographical Society it will be possible to utilise its resources more completely. The publication of the Journal has been one of the most useful of the society's activities. The Council report with pleasure that they receive from competent authorities the assurance of the service it renders to geographical science. Many who are unable to attend the meetings of the society peruse the proceedings recorded in its pages with profit and with pleasure.

In conclusion, the Council commend the interests of the society to the members, with the hope that all will do their utmost to increase its means and enable it to carry out with increasing efficiency the great objects for which it was established.

OBITUARY.

The Society has suffered severely by deaths during the year 1889. Among those who have thus gone may be mentioned Mrs. Roby (one of the members of the Council), Mr. Harold Woolley, the Rev. Dr. Macfadyen, Mr. T. A. Walker (contractor for the Manchester Ship Canal), Mr. Alderman Goldschmidt (one of the trustees of the Society), Mr. John Slagg, M.P. (one of the founders of the Society), Mr. Ventry de M. Mellin, Mr. J. J. Armitage, Mr. W. A. Beith, Mr. A. Dehn, Mr. H. Jeffries, Mr. D. T. Craig, Mr. M. W. Thompstone. Also the following life members: Mr. J. W. Edwards, and Mr. R. Peacock, M.P.

The dropping out of members by death is one of the painful experiences of a Society like ours. We are grateful for the generous help they have given us whilst here, and revere their memory when departed. The work they have left unfinished must now be taken up by other hands, and a list such as this one is a call to our members to help us in the effort to obtain the addition of new members to take their places in the great work we have in hand, whilst the call to those who are members is equally great to do all they can in the short space it may be they have allotted to them in this place.

REVENUE ACCOUNT,

January 1st to December 31st, 1889.

INCOME.	£	s.	d.	£	s.	d.
To Balance, 1888				31	15	10
,, Members' Subscriptions—						
,, 406 Ordinary at 21s.	426	6	0			
,, 186 Associate at 10s. 6d...	97	13	0			
,, 1 Society at £2 2s.	2	2	0			
				526	1	0
,, Transfer from Life Membership Account........				31	0	0
,, Bank Interest				0	17	3
				£589	14	1

EXPENDITURE.	£	s.	d.	£	s.	d.
By Expenses of Meetings..				162	2	3
,, Journal, Supplement 1887 to March, 1889				245	6	0
,, Rent, Rates, Gas, and Insurance................				51	6	0
,, Books, Maps, Binding, and Shelves for Library				23	19	5
,, Sundry Expenses, Stationery, Telegrams, Postage, Carriage, Cleaning Offices, &c.	89	0	5			
,, Commission and Expenses, Circulars, Postage, &c., for New Members..	13	4	2			
				102	4	7
,, Balance carried forward..				4	15	10
				£589	14	1

GENERAL BALANCE ACCOUNT,

January to December 31st, 1889.

ASSETS.	£	s.	d.	£	s.	d.
To Arrears of Members' Subscriptions, estimated at				299	15	6
,, Balance of Deficiency Account, as per last Balance Sheet	88	19	2			
,, Less Donations received..	3	11	6			
				85	7	8
,, Stock of Journals on hand				45	17	0
,, Cash in hand, Treasurer..	2	0	9			
,, ,, Secretary..	2	2	4			
				4	3	1
				£435	3	3

LIABILITIES.	£	s.	d.
By Eleven Life Membership Subscriptions in Reserve....	115	10	0
,, Accounts owing to Sundry Persons	314	17	5
,, Balance from Revenue Account..	4	15	10
	£435	3	3

AUDITORS' CERTIFICATE.

Audited and found correct,

(Signed) THEODORE GREGORY, F.C.A., } Auditors.
WILLIAM ALDRED, F.C.A., }

July 25th, 1889.

The Report and Balance Sheet were adopted on the motion of the CHAIRMAN; seconded by Mr. M. STIRRUP, F.G.S.

The following were duly elected to be the Council and Officers of the Society for the ensuing term :—

PRESIDENT.

His Grace the Duke of Devonshire, K.G., Chancellor of the Victoria University.

VICE-PRESIDENTS.

The Most Hon. and Rev. the Marquis of Normanby.
The Right Hon. the Earl of Derby, K.G., &c., &c.
The Right Hon. Lord Egerton of Tatton.
The Right Hon. Lord Winmarleigh.
Lord Frederic S. Hamilton.
The Right Rev. the Lord Bishop of Manchester.
The Right Rev. the Lord Bishop of Salford.
The Worshipful the Mayor of Salford.
The Worshipful the Mayor of Stockport.
The Worshipful the Mayor of Rochdale.
The Principal of Owens College.
The Very Rev. Monsignor Gadd.
The Right Hon. Sir James Fergusson, Bart., C.I.E., M.P.
The Right Hon. A. J. Balfour, M.P.
Sir W. H. Houldsworth, Bart., M.P.
Sir Humphrey F. De Trafford, Bart.
Sir J. C. Lee, Kt., J.P.
Sir J. J. Harwood, Kt., J.P.
The Hon. Algernon Egerton, J.P.
Mr. B. Armitage, J.P., Chomlea.
Mr. Jacob Bright, M.P.
Professor W. Boyd Dawkins, M.A., F.R.S.
Mr. Edward Hardcastle, M.P.
Mr. Oliver Heywood, J.P.
Professor A. Hopkinson, M.A., B.C.L.
Mr. H. H. Howorth, M.P.
Mr. Isaac Hoyle, M.P.
Mr. J. Thewlis Johnson.
Mr. Henry Lee, J.P.
Mr. William Mather, J.P.
Mr. Samuel Ogden, J.P.
Mr. H. J. Roby, M.A.
Councillor Henry Samson, J.P.
Mr. C. E. Schwann, M.P.
The Rev. S. A. Steinthal, Chairman of the Council.

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Mr. Mark Stirrup, F.G.S., Hon. Sec. Manchester Geological Society.
Mr. Thomas Swanwick.

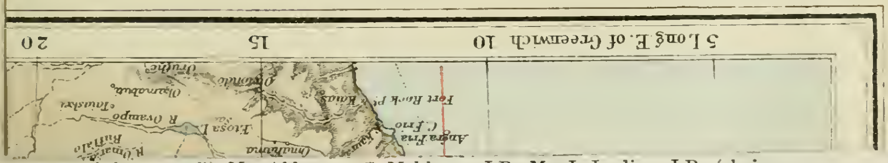
AUDITORS.

Messrs. Theodore Gregory, F.C.A., William Aldred, F.C.A.

SECRETARY.

Eli Sowerbutts, F.R.G.S., 44, Brown Street, Manchester.

The very hearty thanks of the Society to the officers for their past services, and regret that Dr. Greenwood had ceased to be the chairman of the Society, with thanks to him for his very valuable assistance in the past, were given ; and thanks to the chairman, for his services to the Society and for presiding, concluded the meeting.



man of the Council), Mr. Alderman C. Makinson, J.P., Mr. J. Jardine, J.P. (chairman

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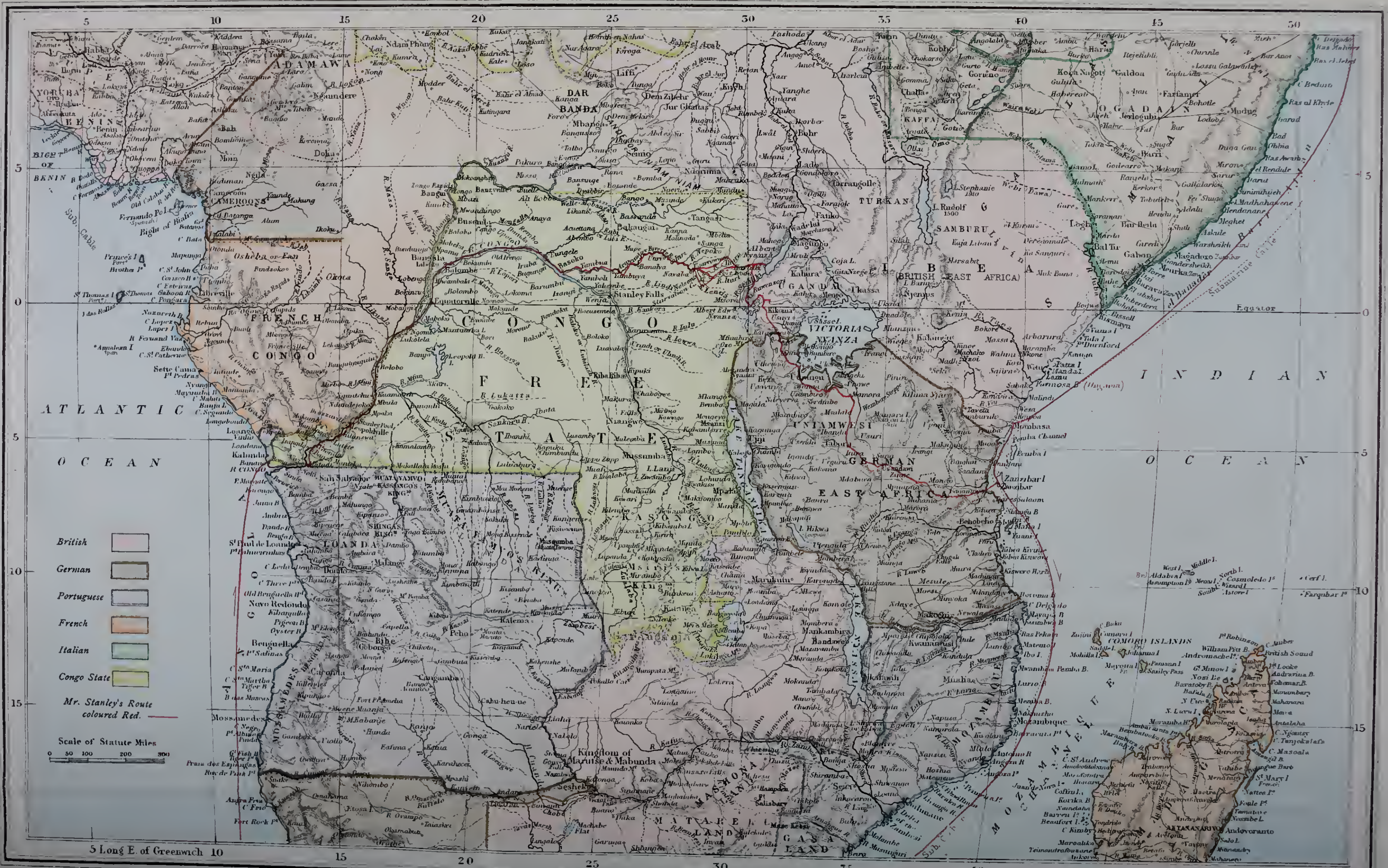
MAP TO ILLUSTRATE MR. H. M. STANLEY'S ADDRESS TO THE MANCHESTER GEOGRAPHICAL SOCIETY.



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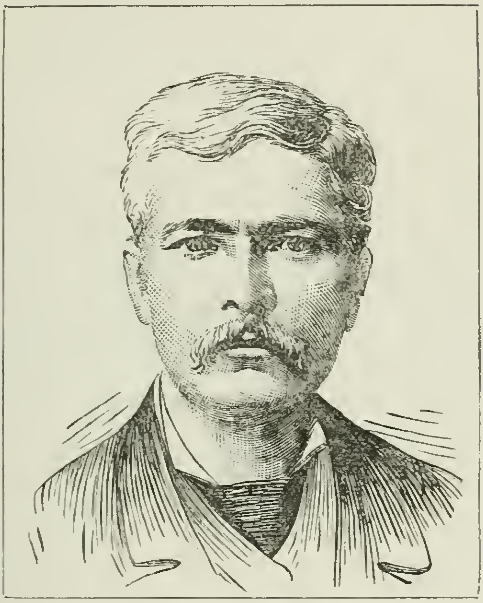
OF THE

MANCHESTER GEOGRAPHICAL SOCIETY.

THE STANLEY RECEPTION.



MR. HENRY M. STANLEY. BORN 1841.

Honorary member of the Manchester Geographical Society.

(*By permission of the* DAILY GRAPHIC.)

JOINT Meeting of the Manchester Geographical Society and the Manchester Athenæum, at the Free Trade Hall, Friday, June 20th, 1890, at 8 p.m.

Mr. Samuel Ogden, vice-president of the Society and president of the Athenæum occupied the chair, and amongst others present were the Worshipful the Mayor of Manchester (Mr. Alderman John Mark) and a large number of the members of the City Council, the Lord Bishop of Salford (Dr. Vaughan), the Worshipful the Mayor of Rochdale, the Worshipful the Mayor of Salford, the Worshipful the Mayor of Stockport, Professor A. W. Ward, Litt. D. (principal of Owens College), Sir J. C. Lee, Kt., J.P., Mr. B. Armitage, J.P., Mr. Oliver Heywood, J.P., Mr. J. Thewlis Johnson, J.P., Mr. S. L. Keymer (vice-chairman of the Council), Mr. Henry Lee, J.P. (president of the Manchester Chamber of Commerce), Mr. W. Mather, M.P., Rev. S. A. Steinthal (chairman of the Council), Mr. Alderman C. Makinson, J.P., Mr. J. Jardine, J.P. (chairman

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of the Manchester Royal Exchange), Mr. T. R. Wilkinson (vice-consul for the Ottoman Empire), Mr. Frederick Burton, Rev. L. C. Casartelli, M.A. (St. Bede's), Professor T. H. Core, M.A. (Owens College), Miss Day, Chevalier Froehlich (vice-consul for Italy), Mr. George Harker, Mr. Elijah Helm, Mr. A. Hughes, M.A., Rev. M. G. Glazebrook, M.A., Mr. Job Irlam, Mrs. B. T. Leech, Mr. George Lord, J.P., Mr. J. Parlane, J.P. (consul for Paraguay), Mr. F. Reiss, M. L. G. le Roux (vice-consul for France), Mr Councillor W. Sherratt, Mr. M. Stirrup, F.G.S. (hon. sec. Manchester Geological Society), Mr. Thomas Swanwick, Mr. A. R. Gallé, and Mr. F. Zimmern (hon. sec.'s of the Manchester Geographical Society), the Venerable Archdeacon Anson, Rev. J C. Allen, Mr. Alderman Dickins, J.P., Mr. G. H. Gaddum, Mr. Gillibrand, Mr. Benjamin Heape, Mr. Alexander Ireland, Mr. Councillor Bosdin T. Leech, Mr. W H. Talbot (town clerk of Manchester), Mr. E. A. Fitzgerald (hon. sec. of the Manchester Athenæum), Mr. T. Schofield (secretary to the Manchester Athenæum), and Mr. Eli Sowerbutts (secretary to the Manchester Geographical Society).

The large hall of the Free Trade Hall was full, every seat being occupied by the members and the friends of the two institutions.

Mr. Ogden said the manifestation of feeling with which Mr. Stanley had been received spoke louder than words the gratification they had in seeing him again on that platform. After triumphing over all the dangers and difficulties of his great journey he was now amongst them, sound in health and whole in limb. The members of the Manchester Athenæum for many years past had been in the habit of listening to men distinguished in literature and in science from that platform, but it might safely be affirmed that never on any former occasion had so profound an interest attached to the personality of any individual as to that of the distinguished visitor who was present with them that evening. He was sure that millions of their fellow-countrymen who had been moved by reading the account of the marvellous adventures of Mr. Stanley felt a deep regard and personal interest in him because they knew how well and nobly he had served the English nation. He had done so from principles, and sentiments, and feelings, and motives higher than those even of patriotism. It had been from a noble impulse and determination that as far as in him lay he would endeavour to serve the interests of humanity at large. He remembered reading some time ago that the United States Minister in Turkey, so much as 18 or 20 years ago, knowing Mr. Stanley well, and at a time when he was nearly unknown to the world, predicted that he (Mr. Stanley) was born to achieve greatness, and that he would yet leave his mark behind him in the world. That Minister said Mr. Stanley had all the qualities of great travellers—a hardy frame, invincible courage, and determination to persevere in any undertaking upon which he entered with the view of prosecuting it to success. That prediction was very early realised, to a very large extent, for soon after that Mr. Stanley had the honour of receiving at the hands of the Royal Geographical Society their gold medal, and the Foreign Minister of that day was requested by the Queen to convey to him Her Majesty's high appreciation of the courage, the prudence, and the zeal with which he had accomplished his mission of finding Livingstone. Not content with that, the Queen sent him her personal thanks, congratulated him upon his great success, and presented him with a valuable gift with the Royal monogram set in brilliants. In view of an important and interesting event which they saw in the immediate future, they might venture to hope that that gift was destined to become an heirloom in the family of Stanley. Mr. Stanley's marvellous courage, vigour, and endurance had enabled him, as regarded those geographical traditions and legends which had come to us from prehistoric times, and yet were after all traditions and legends, to clothe them with a good deal of life, truth, and actuality, which had elevated them into the region of historic facts, and had made the world at large Mr. Stanley's debtor. He ventured to say that Mr. Stanley had discovered a new continent for the world, and he had opened up that continent to the agencies and resources of civilisation, and in opening it up to those agencies and resources he had given a death-blow to the barbarous customs inseparable from slavery and the slave trade. With those few remarks of an introductory nature he begged now to invite Mr. Stanley to deliver his address.

Mr. STANLEY then addressed the meeting and said: It was to a Scotchman that they were indebted for that beautiful and inspiring picture of a governor at bay in the far-off Soudan, defying the victorious Mahdists, and fighting bravely inch by inch for the land which he had been appointed to rule by General Gordon. That governor was described as a tall military figure, of severe aspect, a rigid moralist, of inflexible will and scientific attainments, and his name was Emin. That picture became impressed upon all their imaginations; and when another Scotchman of Argyleshire asked him if he would be willing to lead an expedition to the relief of Emin, the image of the brave governor fighting against immense odds in the remote heart of Africa, straitened in means, environed by dangers, isolated from his kind, filled his mind, and in a reckless mood he answered in the affirmative. And forthwith came appeals from the brave, adventurous, and young in these islands that he would be pleased to associate them with him in the enterprise of relief. They vowed strictest fidelity, obedience to any terms, and the utmost devotion, and from among a host of applicants Major Barttelot, of the 7th Fusiliers; Mr. Jameson, a rich young civilian; Lieutenant Stairs, of the Royal Engineers; Captain Nelson, of Methuen's Light Horse; Surgeon Parke, of the Medical Department; Messrs. Jephson, Troup, Ward, and Bonny, were enrolled as members of the expedition to relieve Emin Pasha, Governor of Equatoria. Had their means only been equal to their opportunities, they might have emptied the barracks, the colleges, the public schools, he might almost say the nurseries, so great was the number of applications to join in this adventurous quest. The route resolved upon was that from Zanzibar westward by the south end of Lake Victoria to the Albert; but about thirteen days before they sailed the King of the Belgians, through his generous offers of assistance, induced them to change their plans and to choose the Congo route, which had the advantage of being about five hundred miles shorter land journey. As regards the choice of route, he said with the utmost deliberation that had they been sent out seven months previous to January, 1887, the Congo route would have been infinitely the preferable; but it happened that there were changes transpiring, even at their departure, of which they knew not, which converted the region they were fated to travel over into hungry forests, in traversing which they were subjected to the most hideous sufferings and privations that ever African caravan underwent. In all his lectures and speeches on Africa he had done his best to remind the audiences of the services of those to whom they ought to be grateful. If he employed the personal pronoun they were to understand that his companions, white and black, were always included, and especially the British officers and Zanzibaris, without whom no relief or rescue of Emin would have been possible. But there was one person whom he had not yet mentioned in connection with their expedition, about whose services he had been singularly silent. Through a strange oversight he had neglected to say a word about Sir William Mackinnon and his associates, who contributed to the fund about £16,000, which made relief possible. Three-fourths of the contributors were Scotchmen. He should not omit to mention, amongst others, the late Mr. J. F. Hutton, of Manchester, and the son of Sir William Mackinnon, who worked with might and main at Zanzibar to equip and prepare the expedition in time. Four days after their arrival—February 25, 1887—they set sail for the mouth of the Congo River. They moved up the river with 680 men and about 160 tons of cargo. The entire force consisted of 11 whites, 623 Zanzibaris, 62 Soudanese, 13 Somalis, and two Swazis. The chief of the Zanzibaris was, he thought, present with them that evening. Accompanying them were Tippoo Tib and 96 of his followers, to whom free board and passage from Zanzibar to Stanley Falls were granted, in consideration of his promising to supply the expedition with 600 carriers to assist in the transport of ammunition to the Albert Nyanza for the beleaguered governor of the Equatorial Province. He need not detain them with an account of the march to Stanley Pool, 340 miles from the sea, nor of the voyage of over 1,000 miles up the Upper Congo to a place called Yambuya, on the Aruwimi River, because they ought to have a fairish idea of the scenery and other things from former addresses of his delivered in Manchester. Speaking of the latest news of Emin Pasha's position, Mr. Stanley said he met Dr. Junker at Cairo, and he made some notes of what Dr. Junker said about the Pasha. His notes were: "Emin Pasha very short-sighted, great linguist, no fighter, but good administrator. Is very prudent. Doubtful about seven years' pay due to him." The last news was very discouraging. The last news received before starting from London from the Foreign Office was that Emin was imploring help before being overwhelmed, that he was debating with himself as to which route would be best for him to retreat by, but that, prevailed upon by Mr. Mackay, he had at last become convinced that it would be best to remain until he received orders from his Government. That the public received later letters giving different views of his position, after the expedition departed from England, did not alter the conditions under which they set out. Having despatched couriers from Zanzibar overland to announce their coming to Emin, with indications of the point of their emergence from the west, they were strengthened in their purpose by a belief that a grateful Pasha, with a grateful army, would be anxiously expecting them, with their minds made up either to renew the struggle against Mahdism or to instantly retreat with them towards civilisation. In debating with himself as to what was the extent of the forest they were about to enter, as to what was its extent inland from the Congo, it never dawned upon his mind that they would find at that altitude a duplicate of the Amazon forest, for in 1886 the Arabs had spread about the rumour that behind the forest there was a great extent of grass land with cattle. That suggested to his mind that two weeks, or at most a month's march, would take them to a lofty pastoral upland similar to that which existed between Lake Victoria and Lake Albert Edward, when, of course, having found a good road in the open country, they could swing along at the rate of ten or fifteen miles per day. They therefore entered the forest with confidence—forty pioneers in front to clear a path through the obstructions, praying that God and good fortune would attend them, and believing implicitly that their errand was noble and commendable. Meantime, with an instinctive sense that the Albert Nyanza would never approach nearer to them, and that the object of the expedition would ever remain unattainable unless they employed physical and mental powers to shorten the distance, they marched on, solemn as the prospect was before them. From morning till night they went forward unceasingly. Step by step they went on, penetrating deeper and deeper into that strange conservatory of nature, the inner womb of a true tropical forest.* It was only

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* Mr. Stanley gives a description of the forest in "Darkest Africa," vol. ii., pp. 69 &c., as follows: "Now let us look at this great forest, not for a scientific analysis of its woods and productions, but to get a real idea of what it is like It covers such a vast area, it is so varied and yet so uniform in its features, that it would require many books to treat of it properly. Nay, if we regard it too closely, a legion of specialists would be needed. We have no time to examine the buds and the flowers or the fruit, and the many marvels of vegetation, or to regard the fine differences between bark and leaf in the various towering trees around us, or to compare the different exudations in the viscous or vitrified gums, or which drip in milky tears or amber globules, or opaline pastils, or to observe the industrious ants which ascend and descend up and down the tree shafts, whose deep wrinkles of bark are as valleys and ridges to the insect armies, or to wait for the furious struggle which will surely ensue between them and yonder army of red ants. Nor at this time do we care to probe into that mighty mass of dead tree, brown and porous as a sponge, for already it is a mere semblance of a prostrate log. Within it is alive with minute tribes. It would charm an entomologist. Put your ear to it, and you hear a distinct murmurous hum. It is the stir and movement of insect life in many forms, matchless in size, glorious in colour, radiant in livery, rejoicing in their occupations, exultant in their fierce but brief life, most insatiate of their kind, ravaging, foraging, fighting, destroying, building, and swarming everywhere and exploring everything. Lean but your hand on a tree, measure but your length on the ground, seat yourself on a fallen branch, and you will then understand what venom, fury, voracity, and activity breathes around you. Open your notebook, the page attracts a dozen butterflies, a honey-bee hovers over your hand; other forms of bees dash for your eyes; a wasp buzzes in your ear. a huge hornet menaces your face, an army of pismires come marching to your feet. Some are already crawling up, and will presently be digging their scissors-like mandibles in your neck. Woe! woe!

"And yet it is all beautiful—but there must be no sitting or lying down on this seething earth. It is not like your pine groves and your dainty woods in England. It is a tropic world, and to enjoy it you must keep slowly moving

"Imagine the whole of France and the Iberian peninsula closely packed with trees varying from 20 to 180 feet high, whose crowns of foliage interlace and prevent any view of sky and sun, and each tree from a few inches to four feet in diameter. Then from tree to tree run cables from two inches to fifteen inches in diameter, up and down in loops and festoons and W's and badly-formed M's; fold them round the trees in great tight coils, until they have run up the entire rarely and with great difficulty that the sunlight succeeded in penetrating the impervious foliage above their heads. After a month's unbroken march they halted a day for rest, and they attempted to question the natives, who had hitherto roughly eluded all efforts to obtain intelligence. They asked them if there were grass lands on the north, east, or south, but the people had never heard of them. This information greatly discouraged the men, and many of them deserted, only, however, to fall victims to hunger or the spears of the inhabitants of the forest. The people had little more than a legendary lore, and in their minds dimly floated the memories of a land that grew darker and darker as the end drew near, and the place was where

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height, like endless anacondas ; let them flower and leaf luxuriantly, and mix up above with the foliage of the trees to hide the sun ; then from the highest branches let fall the ends of the cables reaching near to the ground by hundreds with frayed extremities, for these represent the air roots of the Epiphytes ; let slender cords hang down also in tassels, with open thread-work at the ends. Work others through and through these as confusedly as possible, and pendant from branch to branch—with absolute disregard of material, and at every fork and on every horizontal branch plant cabbage-like lichens of the largest kind, and broad spear-leaved plants—these would represent the elephant-eared plant—and orchids and clusters of vegetable marvels, and a drapery of delicate ferns which abound. Now cover tree, branch, twig, and creeper with a thick moss like a green fur. Where the forest is compact as described above, we may not do more than cover the ground closely with a thick crop of phrynia, amoma, and dwarf bush; but if the lightning, as frequently happens, has severed the crown of a proud tree, and let in the sunlight, or split a giant down to its roots, or scorched it dead, or a tornado has been uprooting a few trees, then the race for air and light has caused a multitude of baby trees to rush upward—crowded, crushing, and treading upon and strangling one another, until the whole is one impervious bush.

"But the average forest is a mixture of these scenes. There will probably be groups of fifty trees standing like columns of a cathedral, grey and solemn in the twilight, and in the midst there will be a naked and gaunt patriarch, bleached white, and around it will have grown a young community, each young tree clambering upward to become heir to the area of light and sunshine once occupied by the sire. The law of primogeniture reigns here also.

"There is also death from wounds, sickness, decay, hereditary disease and old age, and various accidents thinning the forest, removing the unfit, the weakly, the unadaptable, as among humanity. Let us suppose a tall chief among the giants, like an insolent son of Anak. By a head he lifts himself above his fellows—the monarch of all he surveys ; but his pride attracts the lightning, and he becomes shivered to the roots, he topples, declines, and wounds half a dozen other trees in his fall. This is why we see so many tumorous excrescences, great goitrous swellings, and deformed trunks. The parasites again have frequently been outlived by the trees they had half strangled, and the deep marks of their forceful pressure may be traced up to the forks. Some have sickened by intense rivalry of other kinds, and have perished at an immature age : some have grown with a deep crook in their stems, by a prostrate log which had fallen and pressed them obliquely. Some have been injured by branches, fallen during a storm, and dwarfed untimely. Some have been gnawed by rodents, or have been sprained by elephants leaning on them to rub their prurient hides, and ants of all kinds have done infinite mischief. Some have been pecked at by birds, until we see ulcerous sores exuding great globules of gum, and frequently tall and short nomads have tried their axes, spears, and knives on the trees, and hence we see that decay and death are busy here as with us.

"To complete the mental picture of this ruthless forest, the ground should be strewn thickly with half-formed humus of rotting twigs, leaves, branches ; every few yards there should be a prostrate giant, a reeking compost of rotten fibres, and departed generations of insects, and colonies of ants, half veiled with masses of vines and shrouded by the leafage of a multitude of baby saplings, lengthy briars and calamus in many fathom lengths, and every mile or so there should be muddy streams, stagnant creeks, and shallow pools, green with duckweed, leaves of lotus and lilies, and a greasy green scum composed of millions of finite growths. Then people this vast region of woods with numberless fragments of tribes, who are at war with each other and who live apart from ten to fifty miles in the midst of a prostrate forest, amongst whose ruins they have planted the plantain, banana, manioc, beans, tobacco, colocassia, gourds, melons, &c., and who, in order to make their villages inaccessible, have resorted to every means of defence suggested to wild men by the nature of their lives. They have planted skewers along their paths, and cunningly hidden them under an apparently stray leaf, or on the lee side of a log, by striding over which the naked foot is pierced, and the intruder is either killed from the poison smeared on the tops of the skewers or lamed for months. They have piled up branches, and have formed abattis of great trees, and they lie in wait behind with sheaves of poisoned arrows, wooden spears hardened in fire, and smeared with poison.

"The primeval forest—that is, that old growth untouched by man, and left since the earliest time to thrive and die, one age after another—is easily distinguishable from that part which at some time or another afforded shelter for man. The trees are taller and straighter, and of more colossal girth. It has frequently glades presenting little difficulty for travel, the invariable obstructions being the arum, phrynia, and amoma. The ground is firmer and more compact, and the favourite camping ground for the pigmy nomads are located in such places. When the plants and small bushes are cut down, we have an airy, sylvan, and cool temple, delightful for a dwelling."

the great serpent lay supine and coiled round the earth. Mr. Stanley described in picturesque detail the character of the march through the forest, his numbers growing smaller and smaller, with starvation all the time in view. Sometimes the men disappeared in twos, or threes, or sixes, some to reach Yambuya, and frighten the officers there with their tales of woe, some to be spear-thrust, some even to be carved for the cannibal feast. The march was terrible through disease, for the smallest thing would start an ulcer. Then the men were often reckless in regard to the provisions, ten days' food being eaten in three or four days. They urged the men to take care of their rations, and told them the only remedy was to press on and on through the accursed wilderness; and the day came at last, after infinite patience, when, well-nigh exhausted with their travels, they reached a veritable land of plenty. There they rested for thirteen days to recuperate and repair the waste of the wilderness. Some natives told them they had seen the grass land for the first time five days' journey further east, and this revived the people, but it was twelve days before the expedition finally emerged out of the forest. On the 160th day after leaving the rear column at Yambuya they filed out of the gloom into the light of broad day, into one of the loveliest lands they had ever seen. Out of 389 men only 173 remained, and out of 216 they had left behind they might pick up about 50, or perhaps less. The nearer they got to the Lake Albert the more warlike the natives seemed to grow. They had to meet new tribes or sections of tribes, each of which imagined it was able to effect what its friends had been unable to do. Despite the most frantic efforts of these, they finally reached, on the 13th December, 1887, the tableland, 5,200 feet above the sea, and looked down on Lake Albert about 2,300 feet below, and just six miles away. The hope that sustained them during their journey from Zanzibar to Lake Albert was that Emin Pasha would proceed in his steamer to the south end of the lake, and warn the natives that he expected some friends from the west; but on their arrival at the edge of the lake they were sorely disappointed to find that for ten years no white man or steamer had been seen on it, and yet they had arrived on the 14th December, one day previous to that on which Emin said he would expect them. After staying two days, and perceiving that no expedition could subsist near Lake Albert, as the shores were occupied by only four fishing villages, they turned sharply about, and, returning, built Fort Bodo. The fort having been completed, and about ten acres of ground cleared, they put in corn, beans, and tobacco, and set out a second time for Lake Albert on the 2nd March, 1888; but on this occasion they conveyed their steel boat which had been made for them in London. On the 20th of April they received a letter from Emin, dated the 25th March, which asked them to stay at Kavalli until he could come to them. They did not wait to do that, but Jephson got a good boat's crew and went in the steel boat in quest of Emin, for had he not written to *Petermann's Mittheilungen*—"If Stanley does not come soon we are lost." He (Mr. Stanley) gave that as an instance of vagary in human nature. Another letter from Emin to his Government contained the following: "Help us quickly or we perish." But after the expedition had started inland he sent a letter to a friend which read proudly thus: "If, however, the people of Great Britain think that as soon as a Stanley or a Thomson comes I shall return with them, they greatly err. For twelve long years I have striven and toiled and sown the seeds for future harvest, laid the foundation-stone for future buildings. Shall I now give up the work because the way may seem open to the coast? Never!" Another instance of that peculiar vagary of human nature was that Emin signed an engagement to enter the German service on February 3, but continued to hold out inducements to the British Company for a month longer that he would serve them. A few days after Mr. Jephson's departure a steamer called the Khedive made her appearance, and in the dusk, amid a wild scene of excitement, Emin Pasha, Captain Casati, and a few Egyptian officers were conducted from the beach to his tent. Until the 25th May their respective camps were close together. They met daily and chatted about various things, and naturally the topic as to whether Emin would stay in Equatoria or accompany him to the coast came up frequently for discussion; but from the beginning to the end of their meetings he was only conscious that he was profoundly ignorant of Emin's intentions. On some days, after a friendly dinner, and when they might have opened a bottle of champagne, Emin held out hopes that he would accompany him; but on the day following he would say, "No; if my people go, I go; if they stay, I stay." For ten days he (Mr. Stanley) assented to that, and listened, but it became impressed upon his mind, or rather he surmised it, that Emin had a personal objection to go to Egypt, because he might be shelved, and his life would be wasted in a Cairo coffee-house. What his views were he could not gather in the least, because the impression of one day was displaced by that of the next, and his real opinions upon any topic were too transient to base conclusions upon. Thinking Emin's objections applied only to leaving Africa, he (Mr. Stanley) finally said to him, after a fortnight, "I see, Pasha, you don't like the idea of going to Egypt. What do you say to a continuation of your appointment here as governor, with the rank of general?" "How?" "Your first duty, of course, is to the Khedive, because you are an officer of his. He suggested that you should retire with me to Egypt; but you evidently don't admire the idea, and from what I gather from you, your troops entertain the same objection. As I only came to serve you, it is for you to state whether an appointment here would best meet your wishes. In the event of your resolving to stay, I have been requested to offer you the post of governor here, with the rank of general, a pay of £1,500 a year, and a subsidy of £12,000." "Ah! indeed; under whom?" "Under Leopold II., King of the Belgians." He replied, "No, Mr. Stanley; I have served the crescent flag for thirty years, and I cannot change it for the blue flag and the golden star all at once." "Well spoken, Pasha," was his reply; "you have quite made up your mind on the subject?" "Quite, and we will say no more about it." "Very good, Pasha. Now, listen. I have one more proposal to make to you. Cast your eyes down this letter which the Foreign Office handed to me among other papers before I left England, in order that I might thoroughly understand the person whom I was seeking. In this letter you offer your province and your services to the British." He replied, "They had no right to publish my private letters. It is a shame!" "I beg your pardon, Pasha. These letters are not published. They are printed for those they are intended for, and it was thought necessary that I should be enlightened on the object of the expedition. Assuming that you are certain to decline the Egyptian aid which we have brought to you, and that you equally decline the offer of King Leopold, I have another proposition to make to you, entirely on my own responsibility." "What is that?" he asked. "That you take service with the British Company, as foreshadowed in your letter to Sir John Kirk. Remove from the province, and accompany me to the north-east of Victoria Nyanza. I will undertake that the natives shall receive you and your troops. We shall assist you to build a fort or two, and after seeing you all comfortable and provided for I shall hasten to the coast, send you a caravan with further supplies, and proceed to England to form a company which shall accept you and your troops with the same pay and rank." "Ah! that is something like an offer. Indeed, I am most grateful, because it is precisely what I would wish, and it will meet every objection, for my troops, so far as I know, dislike going to Egypt, and if they are contented I shall be most pleased. But can you guarantee this?" "I can guarantee nothing, but I will do my best to make the project a success." "Well, I am delighted with it. If you will let Dr. Parke stay with me as witness to my troops, it will be better evidence of the truth of what I say." "Dr. Parke is our only surgeon, and we require him every day. If it is only a witness you want, why not Mr. Jephson?" "Very well; let it be Mr. Jephson. He would be able to report what he has seen." A few days after that conversation the Pasha sent the commander of his troops and head clerk to him (Mr. Stanley), and they could imagine his astonishment when, as soon as they were seated, they began to pour forth the most violent abuse of the Pasha. They declared he was the most consummate "fibber" they had ever known. Considering what fibbers the Arabs were, he thought they were greatly exaggerating. He asked them if the Pasha was aware of their sentiments. "Oh, no," they replied; "he would cut our heads off if he knew we were telling you this. But we all want to leave this accursed country. We are tired of our life here. The Pasha will perhaps tell you differently, but he has the most crooked ways, and you cannot believe a word he says. All he cares for are beetles and butterflies." The officers continued in that strain for quite an hour. All this made no more impression upon him than it would upon them, further than making him think that if such sentiments were general in those provinces the condition of things could not be a very happy one. About the third week of their stay with Emin the major and officers of the only reliable battalion left were formally introduced to him. Agreeably to a suggestion of his, Emin turned to the commanding major and said, pleadingly, "Now promise me, please, before Mr. Stanley, that you will give me the forty soldiers necessary to garrison this station." The first battalion had been in revolt eighteen months before, and the Pasha was a fugitive from their vengeance, and here, in his (Mr. Stanley's) face, was the Pasha pleading mildly to the only loyal battalion, as he called it, left to him. And yet externally the Pasha was still the governor, obeyed and treated as his rank and his authority deserved, but underneath treason and rebellion fermented. Emin Pasha was either unconscious of it, or dissembled so well that he (Mr. Stanley) could only venture to say to himself that the thing was very extraordinary and quite unlike the state of things they had pictured in England. Towards the latter part of May they left Emin and Mr. Jephson, and up to the last moment the Zanzibaris thought that Emin was a great and powerful governor. His thoughts were busy trying to piece this thing and that together in order to attain to a reasonable solution of many things. Nevertheless the Pasha impressed them as an amiable and accomplished gentleman. When they set out to hunt up the rear column they firmly believed that on their return they would find the Egyptians collected on the little island ready for departure homeward, or the Pasha firmly established under more promising auspices, with his faithful Soudanese troops around him. On arriving at Fort Bodo he found that Lieutenant Stairs had returned with the remnant of the contingent left with the Manyuema. Invalid farming with the Manyuema had turned out to be almost as bad as baby farming in England in the olden time. After eight days' rest they proceeded on the back trail, and on the eighty-second day after parting with Emin they appeared before Banalya, a stockaded village about ninety miles east of Yambuya. They there learnt that instead of following the track of the vanguard the officers of the rear column had elected to wait at Yambuya for the promised contingent from Tippoo Tib, who had induced them by repeated promises to carry out his agreement, to delay their departure. Ten months after the day on which they were to have left Yambuya they set out, but in the meantime 100 people of the rear column had perished, and 33 had been left behind. Mr. Jameson had travelled 1,200 miles to obtain the Manyuema contingent, and Major Barttelot had personally travelled 800 miles. On the second day after the major's arrival at Banalya from paying the eighth visit to Stanley Falls, he was assassinated by the very people he had travelled so far and sacrificed so much to obtain. On the 20th December, 1888, they burst out of the forest once more on the edge of the plantations of Fort Bodo, and by nine o'clock the volleys of the rifles woke up the garrison at the fort to the fact that after 188 days' absence from them the expedition had returned with all that was left of the rear column. But there was one great mystery yet remaining. Mr. Jephson had promised to visit Fort Bodo within two months of their departure from Lake Albert—say about the middle of August. It was now about the middle of December, and nothing had been heard of him. But the cure for all doubt and misery was action, and therefore they could not remain passive at Fort Bodo. They took three days' rest only, and then set out for Lake Albert for the third time on the 17th of January of last year. When they got within a day's march of the lake a packet of letters was placed in his hand by a native, stating that Jephson and Emin Pasha were prisoners; that they had been arrested by the revolted troops of the province. The Pasha also seemed to think that nothing could be worse than the outlook for him, and he specially recommended his child to Mr. Stanley's care. He picked up a crumb of comfort from the fact that Mr. Jephson stated that he could come to him if he knew of his arrival, which he decided was the best thing he could do. Accordingly an imperative message was sent to Jephson not to debate, but to act, and like a faithful and obedient officer he stepped into a canoe, and came in time for him to congratulate him on his narrow escape from becoming a footman of the Emperor of the Soudan. He asked Mr. Jephson if the Pasha had decided what to do. "To tell you the truth," Jephson said, "I know no more what the Pasha intends doing than I did nine months ago." He next asked who was going to take charge of his ammunition, because it had not been brought for the revolted soldiers, but for the governor, and if the governor was a prisoner and could not use it, he (Mr. Stanley) would have to consider whether he should not blow up the store for him. It was not long before the mystery, which had struck him before, was cleared up, for it appeared that the Pasha had been deceived by the Egyptian officers. Some years before it was reported to Gordon that immediately communication with Khartoum was suspended for a time the discipline had become such as to cause anxiety. In 1886 the Pasha had fled from the first battalion, and until his imprudent resolve to take Jephson amongst the rebels he had held no communication with them. The second battalion only performed such service as it pleased them, while the irregulars followed the example of the majority. All this was clear from what Mr. Jephson reported to him, and they would remember that the Pasha had said, "When you return, Jephson will be able to report to you what he has seen." It was corroborated by the strange request of the Pasha in May, 1888: "If you please, now promise me before Mr. Stanley that you will give me forty soldiers, who, he says, are necessary for this station." He (Mr. Stanley) resolved to try once more and ascertain what measures agreeable to the Pasha he should take. Did he wish an armed rescue, or was it possible for him to do anything, such as seizing a steamer and following Jephson, or could he march out from where he was a prisoner and meet him (Mr. Stanley), or had he quite made up his mind to remain a prisoner until the rebels should dispose of him? Any way and every way, if Emin could only express a definite wish, he (Mr. Stanley) would be bound to help him to the uttermost. He wrote Emin a most scrupulously polite, Chesterfieldian letter to that effect, because he was warned that the Pasha was morbidly sensitive. While this letter was being conveyed on the lake matters were settled in quite an inconceivable fashion. The rebel officers had heard of their coming with Maxims and breech-loading rifles. They were frightened, and hastened to the Pasha to ask his pardon and to beg to reinstate him in his governorship The pardon was given, but he declined the other request. They asked the Pasha to accompany them on a visit to him (Mr. Stanley). That was done, and on the 13th February last year the two steamers had approached their camp, and two days later they were in the camp. According to the Pasha, the Mahdist invasion and the capture of four stations and the massacre of the rebel officers had cowed them; they were repentant, and willing at once to depart to Egypt to greet their great Government. The officers now asked only for time to assemble their families. Agreeably to the Pasha's request, reasonable time was granted, and the officers departed. The governor thought twenty days would be sufficient; Mr. Stanley granted a month. At the end of the month the Pasha requested another extension, and Mr. Stanley allowed a fortnight more. Finally, at the end of six weeks, not one officer of the rebel party having made his appearance, they broke up their camp and commenced their journey home with 570 refugees. On the second day an illness prostrated him, and this gave the rebel officers twenty days' grace, yet, after seventy-two days spent near the lake, only one person had availed himself of their offer. On the seventy-third day four soldiers brought a message stating that the rebels had formed themselves into two parties. The first had seized all the ammunition from the second and fled. The second party, unable to muster resolution to follow Mr. Stanley's expedition, had preferred to remain behind to curse the first party and their following. What the end of those misguided and unprincipled men might be no person knew outside that unhappy region—whether the second party preferred to follow the first party and submit to the chief of the first party, or his superior in fraud and dissimulation, or whether in attempting to follow he was overtaken and killed, could only be idle speculation. Their fate proved the truth of the Greek saying, "Whom the gods wish to destroy they first make blind," for such blind and unreasoning specimens of humanity he never met with in the whole course of his experience. The expedition departed finally from that region on the 8th May last year, and by the 5th December, in a period of 210 days, they had marched 1,400 miles, and out of 570 refugees they succeeded in escorting Emin Pasha, Captain Casati, Signor Marco, and 291 of their followers safe to the Indian Ocean. They knew also that a few days before reaching the coast they were welcomed and most hospitably entertained by the German officers in East Africa, and that on the very first evening of Emin's introduction to his dear countrymen a banquet given in their honour terminated in an unfortunate accident which well-nigh proved fatal to Emin; but they would be glad to learn, however, that since the latter part of February Emin Pasha had been busy writing his book and arranging his entomological and ornithological collections, and had again started for the land lying between the Tanganyika and the Victoria Nyanza to annex those interesting regions in the name of the Imperial German Government. During the wanderings of his expedition from Banana Point, on the Atlantic, to Bagamoyo, on the Indian Ocean, which lasted 987 days, they travelled 6,000 miles, 1,670 of these miles measuring their tramps to and fro in the twilight of the great Central African forest. Let him show them a glimpse of it. One of their officers always spoke of it as a bush—but he had been in New Zealand. It was not a bush, or a jungle, or any kind of tree-covered tract such as was known to people in temperate climates. It was a forest, extending to 224 million acres in extent, four times the size of Great Britain, crowded with colossal trees, mainly from 1ft. to 5ft. in diameter, 200ft. in height, with very straight and long glossy foliage so interlaced that the glare of the tropical sun was quite shut out. Each tree was seemingly lashed to the other by endless lengths of cables, ranging from long thread-like creepers to others of the thickness of the old hempen hawsers used on board line-of-battle ships. The undergrowth was so close that one fancied that he could travel better on the top than underneath. As to the members of the expedition, while they fancied themselves the only inhabitants, the foliage above might be haunted by birds of gay plumage, such as the parrot, the cockatoo, and sun birds; divers and kingfishers might at the same time be sitting by the river watching for their finny prey; a family of chimpanzees reposing in connubial bliss; not far off, tribes of small monkeys engaged in gymnastics; a troop of monstrous elephants, a herd of buffaloes, and frequently a ground antelope might be seen, the latter lifting itself from the spot where a man was going to place his foot. To get a broader view of this forest they must think of the great rivers by which it was traversed. Then they must people this great tract with small tribes dwelling amid the *debris* and wreck of mighty woods, from ten to thirty miles apart, in absolute ignorance that there could exist any other world than their own. These people were possessed of such a mania for any kind of animal food that when any member of the expedition died he was buried in one of the rivers lest the body should be exhumed. In the eastern part of the forest he found several tribes of primeval African men. At the base of the Ruwenzori, or the Mountains of the Moon, they met two distinct tribes—one very degraded specimen, with ferrety eyes close set, and excessively prognathous jaw, more nearly approaching to what one might call the simian than one might suppose to be possible and yet to be thoroughly human; and the other a handsome type with open, innocent features—very prepossessing. They had considerable experience of both of them. They were wonderfully quick with their weapons, and wounded to death several of his followers. Their custom was to shoot at sight; and their craft, quick sight and correct aim, and general expertness, added to their poisoned arrows, made them no despicable antagonists. When they were successful in the chase or in trapping, a fair trade was made between the pigmies and a brown-bodied tribe living to the east, who had sinewy, sturdy figures. Many of the little people were as perfect from the knees upwards as a sculptor would desire, but the lower limbs were weak and badly-shaped. They were quick and intelligent, capable of deep affection and gratitude, and those whom the members of the expedition trained showed remarkable industry and patience. One old woman, 4ft. 2in. in height, and possibly, as they thought at first, the ugliest little mortal they had in their camp, exhibited most wonderful endurance. She seemed always loaded like a camel, as she followed the caravan from camp to camp. He often had to reduce her load that threatened to bury her, as it consisted of cooking pots, stools, porridge pans, kettles, bananas, native ropes, ironware, and what not. Everything was placed in her hamper, as if her strength was without limit. Towards the latter part of their acquaintance with her he was able to make her smile once, but it had been terribly hard work, as she was an inveterate scold. By action and by look she seemed to say, "You may beat me to pulp, you may load me till you smother me, you may work my fingers to the bone, you may starve me, but, thank goodness, I can scold, and I will scold till I drop." They had a pigmy boy of eighteen who worked with a zeal that he did not think possible outside civilisation. Time was too precious for him to waste in talk. On the march he held his place near the van. When they reached camp he literally rushed to collect fuel to make his master's fire. His mind seemed ever concentrated on work, and yet he was only 4ft. high. He once stopped him to ask his name, and his face seemed to say, "Please, don't stop me; I must finish my task," and yet he never heard that boy's voice, and he was not dumb. Another was a young woman, of whom he could honestly say that she was virtuous and modest, though half naked. It was no use for any stalwart Zanzibari to cast eyes at her. She resolved that she had duties to perform, and she did them without deigning to notice the love-sick swains of the camp. Her master's tea or coffee were far too important to be neglected. She required no enjoyment. Her master's pleasures were to her unspeakable pleasures. The picture of this young naked pigmy dame abjuring privileges and rendering due fidelity and simple devotedness because it was her nature to would long remain in his mind as one of many pleasant things to remember. He had no time to touch upon any of the more important features of the grass land, except upon the most singular of all, the Ruwenzori, or Mountains of the Moon, from which the melting snows filled the rivers that flowed into Lake Albert. How these immense snow mountains could have remained so long hidden from intelligent explorers was a mystery. According to every ancient account, from Homer down to the beginning of the present century, they had been located faithfully enough for all practical purposes by tradition, but, though during the last twenty-five years Sir S. Baker and a number of travellers had been within fifty miles of them, they had remained unseen. But suddenly, before a thousand pair of eyes, after the expedition had rested nearly a month at one camp, the snow range was seen in all its splendour. If they could imagine an island 100 miles long and half as many wide suddenly rising into view at the mouth of the Mersey, over 18,000ft. in height above the sea, clothed half way up with primeval forest, the other portion capped with pure white snow, they would understand something of the awe and the delight with which the members of the expedition gazed upon this wonderful revelation of the unknown. Perhaps the Bernese Oberland gave the best idea of the picture. The valley west of it, from which the Semliki winded, embraced about 3,000 square miles, and was one of the most prolific valleys in the world. Its central portion was covered by a very large forest, in which the natives had made clearings, and in which there were large quantities of luscious fruits. Battalions might easily have been supplied with provisions, so that for once Africa was seen in perfection by the long-enduring column of wanderers. To the north of the valley was the Lake Albert* in the midst of a wide grassy plain which occupied what was once a spacious inland sea. Until within the last ten years these plains were remarkable for hundreds of herds of fawn-coloured cattle, but with the guns given them by deserters from Emin Pasha's provinces, the people had almost exterminated the cattle, and the pastoral tribes which possessed the land had been broken up. Once the line of longitude 30 was crossed they were out of the zone of perpetual rains, and the region eastward, as far as the Indian Sea, was subject to six months' drought and six months' rain. Most imperfect the audience might deem the address, but his aim had been mainly to rouse their curiosity. The books that would be published within the year would satisfy their natural desire to know particulars about Emin and his provinces, and give sufficient details of the strange new lands traversed by the expedition. Since he touched the Indian Ocean last December he had been hungering for his rest and his holiday. He thought, however, that the Athenæum and the Geographical Society of Manchester, having welcomed him in years past, had an equal right to a visit from him as other societies in Scotland. It was a matter of deep regret to him that he had been unable to give them something more worthy of the sincere friendship and admiration he entertained for many friends of his in the city of Manchester.

The Rev. S. A. Steinthal, Chairman of the Council of the Manchester Geographical Society, proposed the following resolution :—

"This meeting, representing the Manchester Athenæum and the Manchester Geographical Society, warmly welcomes Mr. Stanley to this city ; congratulates him on the successful accomplishment of his journey through Central Africa, after unexampled difficulty, privation, and peril ; and recognises that by his courage, endurance, and practical wisdom he has been enabled to make invaluable contributions to geographical research, and to the cause of humanity and civilisation."

Mr. Henry Lee, Vice President of the Society, and President of the Manchester Chamber of Commerce, in seconding the motion, spoke of the valuable services Mr. Stanley had rendered to the commercial interests of the city.

The motion was enthusiastically carried.

Mr. Stanley, in reply, said : I have been attempting for the last one hour and twenty minutes to tire you to sleep. To-morrow

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*Lake Albert is to the *north*. If he really meant *south*, then the Lake Albert Edward, which he himself named, would be the one meant, but most likely he meant north.

I hope, with the permission of the good Mayor of Manchester, that I shall endeavour to excite the vigorous commercial spirit of this city. But in the meantime, as it is drawing now to midnight, and the carriages have been ordered at a quarter to ten, I will dismiss you with my benediction and my thanks.

This concluded the proceedings.

A meeting of the City Council was held on Saturday morning, June 22nd, 1890, to which a deputation from the Manchester Geographical Society was invited, when the honorary freedom of the city of Manchester was conferred on Mr. H. M. Stanley. A special meeting of the City Council was held for the purpose in the Council Chamber, to which, besides the members of the Council, a number of privileged persons were admitted. There was a full public gallery also on the occasion. The aldermen and councillors were nearly all present. Amongst others in the room were Mr. O. Heywood (the first honorary freeman of the city), Sir J. C. Lee, Mr. Henry Lee (president of the Chamber of Commerce), Mr. T. R. Wilkinson (treasurer of the Society), the Rev. S. A. Steinthal (chairman of the Council), Mr. S. L. Keymer (vice-chairman), Mr. Sowerbutts (secretary), and Mr. W. Pollitt. The Mayoral chair was set upon a raised platform, prettily decorated with flowers and plants and covered with red cloth. On this platform Mr. Oliver Heywood, the Mayoress, and members of the Mayor's family, were accommodated with seats. The Mayor (Mr. Alderman Mark) was in full official robes, as was also the Town Clerk (Mr. W. H. Talbot).

The MAYOR announced that they were met to confirm the proceedings of the special meeting of the Council on the 18th June, when it was decided to pass the following resolution :—

"That this Council desire to express their sense of the distinguished services rendered by Mr. Henry Morton Stanley to the interests of civilisation and commerce by the explorations in Africa, which have made his name illustrious. They also desire to record their admiration of the fortitude, skill, and heroism displayed by Mr. Stanley throughout his arduous and perilous enterprises, and to congratulate him upon his return in safety to this country after so long an absence. The Council, in recognition of these eminent services, do hereby, in pursuance of 'The Honorary Freedom of Boroughs Act, 1885,' confer upon the said Henry Morton Stanley the honorary freedom of the city of Manchester, and hereby admit him to be an honorary freeman of the city of Manchester accordingly." He now moved that the proceedings be approved.

Alderman Sir JOHN HARWOOD seconded the resolution, and it was adopted unanimously.

Members of the Council and visitors then rose, and the Mayor, the Deputy-Mayor (Sir John Harwood), Mr. Alderman Heywood, and the Town Clerk introduced Mr. Stanley to the room, when he was greeted with cheers. Mr. Stanley then took his seat, a black youth who accompanies him being seated behind him, wearing a red fez.

The TOWN CLERK read the resolution adopted at the special meeting referred to.

The MAYOR, addressing Mr. Stanley, then said : I esteem it a great privilege that it devolves upon me as Mayor to present to you, on behalf of my fellow-citizens, the honorary freedom of the city of Manchester, as a token of our high appreciation of your distinguished services in your explorations in Central Africa. Although no words of mine can give additional lustre to your great achievements, the occasion requires that I should briefly supplement the resolution which has been inscribed upon the roll conferring the freedom of the city. In the first place I would express the hope that it may be enhanced in your estimation by the fact that in this great municipality this distinction has only been granted on one previous occasion. Mr. Oliver Heywood, the distinguished citizen referred to, is now present. You have already been for several months in this country, and some of the incidents and results of your last remarkable expedition have been communicated to the public by your speeches and letters, yet it may be said with truth that the public enthusiasm and interest are unabated, and although this is not the only occasion on which you have recently received the highest honour which it is in the power of municipalities to bestow, yet we feel assured that a similar honour has never been conferred with greater cordiality. As you are doubtless aware, the city of Manchester is the centre of a large manufacturing and commercial district, embracing within a radius of twenty-five miles from this chamber not less than twenty-six municipal boroughs and a population of several millions of people. In this large industrial community your career and achievements have naturally awakened the deepest interest, and I venture to say that nowhere has news in regard to your movements been looked for with greater interest, or the successive stages of your progress been watched with greater anxiety, than here. If Manchester and Lancashire hold their supremacy in their great industries, as we intend they shall do, there is no part of Her Majesty's dominions more interested in the inevitable outcome of your great work. The graphic accounts of your travels presented by you to the world will form an enduring record of your indomitable courage and the successful prosecution of a great and perilous enterprise in the exploration of the River Congo, and tracing its course from the interior of Africa to the Atlantic Ocean. The native races among whom you travelled so long have found in you a friend indeed, who has raised a powerful voice in calling public attention to their sufferings and miseries in a manner that has deeply impressed the whole civilised world. It cannot be doubted that the representations which you have so forcibly made upon this subject will influence a vigorous and humane policy towards those tribes, and we trust that the objects you so strongly advocate and so earnestly desire may be speedily accomplished. We hope that the recognition of your eminent services which the city of Manchester has the pleasure of giving in the proceedings of to-day may in some degree inspire and help forward your efforts to civilise and to benefit the native races of Africa. Time would not permit, and any language which I can command would fail adequately to express our feelings of wonder and admiration at the revelations of your last expedition in the Dark Continent, from which we all rejoice that you have returned in health and safety. In concluding these remarks, permit me to hold out to you the right hand of fellowship from the citizens of Manchester, with a cordial welcome, and to ask your acceptance of the freedom of this city, and at the same time to express our best wishes for your long life and happiness.

The Mayor then presented to Mr. Stanley the address of the Corporation, contained in a silver-gilt casket, amid hearty applause.

Mr. STANLEY, in reply, said: Mr. Mayor and Gentlemen,—I fear that if gratitude must be measured by the number of my words or the length of my reply, you will deem me an ingrate indeed if, as I shall have occasion presently to reply to others and also to you, seeing that you are citizens of Manchester, I shall curtail this preliminary speech by merely expressing to you my profoundest gratitude for the honour you have bestowed upon me. Though one may well feel proud of being elected an honorary citizen of a great city like Manchester, and may be immensely gratified to hear of the appreciation with which those works which the Mayor has enumerated to you have been held by you, still you must understand, and you will readily do so, that there is a greater joy possible than receiving honorary freedoms day after day from great municipalities and great cities, and that joy is the pleasure that a man finds and feels in doing a good action. As the poet has expressed it, "Joy so lies in the doing, and the rapture of pursuing is thine." Then also there is that calm approbation of conscience expressed by the poet, "Not once or twice in our fair island's story Has the path of duty been the way to glory." I have always been animated by a single-minded desire to perform my work as thoroughly and as efficiently as possible from the beginning to its consummation. It is not for me to question why the thing should be done, but, as the soldier who was commanded by the Centurion of old to do something said, let others find out the reasons of his doing. Therefore, when commissioned to find Livingstone, all that I could see was that the object of my search was to be attained as quickly and as efficiently as possible, and if I could lend him any extraneous service well and good. Also, when commissioned to continue the explorations of Burton, Speke, Grant, Baker, and Livingstone, what I had to do was simply to map out those plans in order for their complete and efficient accomplishment, and fortunately I succeeded. Then, again, it was not for me to question whether Emin Pasha, the governor of Equatoria, needed relief or rescue, or anything else. The English people believed that he, as the lieutenant of Gordon, sending an appeal for help, ought to be relieved; and when the commission was put into my hands all I looked at was the spirit or intent of that commission. It was not for me to ask whether he wished to be relieved or rescued; all I had to do was to finish my duty completely, and as relief was carried to him and it was afterwards changed to rescue, and he was brought into the arms of his countrymen at Bagamoyo, it surely was proved that the duty that we were sent out to do was accomplished. I may promise you that if ever I shall be sent on any other duty, if I believe it is noble and commendable, you may rest assured that it is in my nature to endeavour to do it as thoroughly and as completely as ever any other duty was performed by me. Mr. Mayor and gentlemen, I hope you accept my deepest gratitude for the honour you have conferred upon me. The freedom of the city of Manchester, placed side by side with the freedom of other municipalities and cities, will enable me to feel the same gratification that I now feel when I shall summon my friends to my house and show them my gifts; and not the least conspicuous of those gifts shall be the freedom of the city of Manchester.

Mr. Stanley then signed the citizens' roll.

The MAYOR announced that three addresses would be presented and Mr. Stanley would reply to them in one speech.

Mr. HENRY LEE, President of the Chamber of Commerce, read the following address from that body to Mr. Stanley :—

To Henry M. Stanley, Esq.

Dear Sir,—The Directors of the Manchester Chamber of Commerce gladly avail themselves of the opportunity afforded by your visit to this city of expressing their deep sense of the valuable service you have rendered to commerce by the information you have made public concerning the interior of Africa, and your declaration of its suitableness as a sphere for commercial enterprise. They regard with admiration the undaunted courage and resolution, under most trying circumstances, which you so conspicuously displayed during your explorations, the prompt manner in which you met difficulties encountered by the expedition, and the ready resource by which you were enabled successfully to accomplish the object of your journey. Your outspoken remarks on the subject of slavery and the atrocities connected therewith, your strong condemnation of the traffic in firearms and ardent spirits as tending to degrade and destroy the natives as well as to hinder the peaceful pursuit of agriculture and trade, meet with our hearty approval. The Directors earnestly hope that your arduous labours may result in the opening up of the "Dark Continent" to the ameliorating influence of civilisation, and the development, in the best sense, of its future welfare. They congratulate you on your safe return to this country, and desire to assure you of their best wishes for a continuance of your prosperous career.—Signed, on behalf of the Board of Directors, HENRY LEE, President.

Manchester, June 21, 1890.

The Rev. S. A. STEINTHAL read the following address from the Manchester Geographical Society :—

To Mr. H. M. Stanley, on the occasion of his visit to Manchester, June 20th, 1890.

Sir,—It is with cordial pleasure that the members of the Manchester Geographical Society welcome you, their earliest honorary colleague, in this city, which is proud to call you one of its burgesses. When you were about to leave this country to revisit Africa, we gathered round you to bid you God-speed on your way, and now we are glad that we are able to greet you on your safe return after such arduous labours, patiently and bravely endured in the cause of civilisation and of humanity.

With thankful hearts we acknowledge the services you have with such unflinching courage and self-devotion rendered to geographical science and commercial progress ; we have in thought accompanied you across that continent into whose darkest recesses you have brought the light of hope, and have opened the pathway for civilisation and religion ; we have sympathised with you in the sufferings you have so manfully encountered, and wish that we could adequately say how highly we honour you for the great deeds you and your gallant companions have accomplished. The story of African travel is illustrious with the names of men whose achievements give them a high place among those who, while extending scientific knowledge, have been able to advance the best interests of mankind ; and among these illustrious heroes your name shines with a clear brilliancy all its own. If specially associated with that of any of your predecessors, it is with the honoured one of Livingstone. We cannot hope, in our address of welcome, to tell the wondrous tale your eloquent books have made familiar to thousands of admiring readers, but we thank you with grateful hearts ; we pray that your labour may not have been in vain, but that God will bless you with many years in which you may be privileged to see your self-devoted toil bearing fruit in the deliverance of Africa from the curse of barbarism, slavery, and heathenism, so that your life, happy in the most sacred personal joys, may also be the source of growing well-being to the millions of that continent which your courage and chivalry have so largely opened to mankind.

(Signed) DEVONSHIRE, President.
J. G. GREENWOOD, Chairman of Council.
S. A. STEINTHAL, Vice-Chairman.
A. R. GALLE, } Hon. Secretaries.
F. ZIMMERN, }
ELI SOWERBUTTS, Secretary.

The Rev. C. N. KEELING read the following address from the Manchester and East Lancashire Auxiliary of the Church Missionary Society :—

Dear Sir,—We desire, on behalf of the Manchester and East Lancashire Auxiliary of the Church Missionary Society, to offer you a hearty welcome on the occasion of your visit to this city, and to congratulate you on the successful termination of your recent mission to Africa.

We wish also to express the satisfaction of our association at your kindly sympathy with the efforts of Christian missions for the enlightenment of the Dark Continent, and your appreciative references to the work of the Church Missionary Society.

We thankfully recall the fact that the mission to Uganda was first undertaken by our society at your suggestion ; and we have learned with considerable satisfaction that those engaged in that mission have been enabled to render some little assistance to you in matters connected with your late expedition.

It is with feelings of chastened pleasure that we dwell upon your high opinion of one who for nearly fourteen years was probably the most prominent figure in that mission, but who quite recently has been called to his rest.

The character and labours of the late A. M. Mackay afford a splendid example of what can be effected by a strong intellect, when fired by a noble enthusiasm in the cause of missions. And his devoted life and early death also bear eloquent testimony to the reality of missionary work, which will not be gainsaid by those who can recognise true greatness even when seen in the midst of obscure surroundings.

We rejoice that we do not need to remind you how largely the labours of the Christian missionary have contributed to awaken in the public mind an interest in the civilisation and elevation of the African races ; and in our further efforts to extend the Gospel of our common Saviour, we earnestly and confidently look for the co-operation and moral support of those, like yourself, whose intimate and intelligent acquaintance with the circumstances of the problem makes their opinion valuable in the promotion of schemes for the real amelioration of native races.

We earnestly hope that your life and health may long be spared, and that the personal qualities with which God has endowed you may continue to be used, under the Divine blessing, for the benefit of your fellowmen in the enfranchisement of those who are in bondage, the enlightenment of the ignorant, and the relief of the oppressed. We remain, dear sir, your very faithfully,

(Signed) J. MANCHESTER, President.
JOSEPH RICE, Treasurer.
C. N. KEELING, M.A.
JAMES P. ROUNTREE, M.A.
C. DUNLOP SMITH, M.A.
J. A. EASTWOOD.
G. F. WATTS.

Manchester, June 21st, 1890.

Mr. Stanley, in reply, said: Mr. Mayor, gentlemen of the Manchester Chamber of Commerce, the Manchester Geographical Society, and the Manchester branch of the Church Missionary Society, I hope you will permit me to address you in one speech in referring to each. Not many hours ago I was continuing the work of exhorting Englishmen and Scotchmen and the inhabitants of these islands to attend to their own interests. I began in London, and continued in Edinburgh, Glasgow, Dundee, Aberdeen, and Newcastle. I must continue it here. In coming towards the coast from our mission I saw many things which compelled me to think, and when I returned to this country I found that few people knew what was about to take place, what the German occupation of East Africa and what the tentative efforts of the British East Africa Company meant. I was considerably nonplussed when I heard the Premier say at the Merchant Taylors' banquet that the topic of Africa was embarrassing and inconvenient. It struck me that there was a necessity for somebody to stand out and endeavour to teach the British people that these things meant a good deal. I probably stepped out of my sphere to do so. I should have been grateful had anyone else done it, and I should have kept in the silence which best befits me, because, as you know, we don't practise public speaking in Africa. Wherever I go throughout this country I hear eloquent, fluent speakers, and I envy them for nothing more than for that remarkable fluency which enables them to roll out sentences of inordinate length and grand beauty. We in Africa confine ourselves simply to giving the necessary orders, and to seeing that those orders are carried out, and perhaps to interchanging good mornings or exchanging salaams, as we pass on our way thinking and reflecting. It was possibly on account of the large leisure permitted to me whilst exercising these mutual interchanges of goodwill that I was enabled to realise the necessities of Africa. And among the most pressing of these necessities was that of arousing the English people to the recognition of the work that the British East Africa Company was about to carry out, as representing British interests at large in Africa. It also struck me that not only might commercial men be benefited, but the missionaries in Africa might receive benefit. As I came along I saw Mr. Mackay, of the Church Missionary Society, at the south end of Lake Victoria, and while conversing with him a courier came in from the coast with despatches, wherein I saw the charter of the East Africa Company. I saw there that their charter was over a territory which extended from the north shore of Victoria Nyanza, so that Mr. Mackay's station was in German territory. I was gratified, however, to find that the line of German territory was the south shore of Victoria Nyanza. Two hundred miles from Bagamoyo, on the Indian Ocean, I came across a place I had discovered in 1871, and which I considered would be a good place for a mission station. It had been occupied by the Church Missionary Society, and not far off there was a mission station of the London Missionary Society, Mpuapua, which was favourably situated at the base of a line of noble mountains. There was a fine stream near by, and the people were docile and good-natured; and bit by bit the station grew in importance until there were fifty native villages established round that one mission station, whereas in 1871 there were but two villages. I found that the church that they had built had been burnt down, that the mission station was roofless, and that the missionary, Mr. Price, was hiding in the bush half starving. He came to me in rather a dilapidated condition, and I asked him what was the meaning of it. He said it was the German occupation of East Africa. In coming out of the bush we learned things bit by bit. One of the orders issued by Major Wissmann was that no more caravans would be permitted to go into the interior, and that all trade routes of the British would be closed. Knowing these things, knowing that I was responsible as much as any man living for the establishment of Mackay's station at Makolo's, of the Church Missionary Society's station at Uganda, and of that mission church at Mpuapua, I thought it was about time for me to speak. When I came to examine those things I found that from originally planting a few acres of tobacco the Germans had gradually crept over the whole of East Africa until they had absorbed 600,000 square miles, and I heard on arriving in England that this 600,000 square miles was but a small portion of what they intended to obtain somehow. Then I thought that if the Government and the Premier allowed that beautiful snowy mountain, Kilimanjaro, to be ceded to the Germans, allowed that insolent diagonal line to go north-west instead of west, allowed the mission station at Mpuapua and the manse to be burned down and that religious community scattered, after your missionaries had invested thousands of pounds in the work, and given a great many years of labour to the work of civilisation—I say, if all these things were to be set at naught, then there was very strong reason for somebody to speak. Therefore, I must needs crave your forgiveness if I meddled in matters which perhaps you think I had no business to do with at all, but it was necessary for me to explain the reason of my speaking. But now I learn that all this is about to be ended. You have reminded me to-day of my associations with Livingstone, and the sentiments you have expressed appeal to me most powerfully. We travelled many months in companionship, edifying enough to me, through a large portion of the region over which Burton and Speke had travelled, and in which Colonel Grant had laboured, and had made discoveries, all of which threatened to become German; and I knew also that my friends Sir William Mackinnon, Sir Francis de Winton, and others had clubbed together, putting £240,000 together for the purpose of exploitation upon a territory described by the charter as belonging to the Imperial British East Africa Company; but if that insolent line, starting at the base of Kilimanjaro, was to be continued north-west, I failed to see how my friends could get anything out of the country, for all that was left was semi-desert, as that line would cut off all that rendered promising the prospects of the British East Africa Company. Now, Lord Salisbury said at the banquet that the subject of Africa was embarrassing and inconvenient. That rather added to my uneasiness. Having travelled across Africa twice, and having wandered up and down it about 24,000 miles, I have come across a great many African chiefs and others who are in the habit of adopting the same style of speech—that is, to belittle anything that they might want to obtain. It may be high statesmanship and high diplomacy to belittle a thing that we want to get, but, at the same time, I prefer my own simple way of adhering to "yea" and "nay," and I hope my "yea" and "nay" will be "yea" and "nay" still. At the same time it is just possible that Lord Salisbury may have been inclined to do good by stealth, and I must admit he has done a vast amount of good, and therefore we will not be ill-natured, nor will we adopt the tone of that accomplished and versatile young gentleman, Mr. Howard Vincent, and say that Lord Salisbury has exchanged the beautiful island of Heligoland for a forest full of pigmies. I do not know where Mr. Howard Vincent can find a forest full of pigmies in that section which is to be taken over as British East Africa. As Mr. Howard Vincent was at one time the head of the Criminal Investigation Department he may have more detective powers than I have, but I think that 200 would be a fair estimate of the number of pigmies to be found in that 650,000 square miles acquired by Lord Salisbury's diplomacy. I am told that Heligoland has eight cows and thirty sheep. Well, the island of Pemba, near Zanzibar, has something like 20,000 acres of cloves and cinnamon, and the produce of this will far exceed the value of eight cows and thirty sheep, and even compensate for the beautiful facilities for sea-bathing which are to be had at Heligoland. What we should be most proud of in this acquisition of Lord Salisbury's is the vast scope and boundless possibilities for British enterprise in Africa. Not long ago the British East Africa Company were anxious for the possession of 150,000 square miles, but they have now secured 500,000 square miles in addition. I can see an enormous possibility for enterprise to extend towards the north over the entire Nile Valley, past Khartoum and Berber down to Cairo and Alexandria, so that when you come to reckon all the tribes of the Soudan, now shut out from civilisation by the Mahdists at

Khartoum, and when you come to count up those tribes scattered over that territory between the Victoria Nyanza and Abyssinia, and all that beautiful pastoral upland secured to you between Lake Albert Edward and Lake Victoria down to the Alexandrian Nile, one degree south latitude, I really think the citizens of Manchester should unite in getting up a testimonial to Lord Salisbury for securing to us such valuable territory. When we look to the German agreement you will find that the Germans have obtained a valuable territory upon the Alexandrian Nile. It is a fine coffee country, and in passing through it lately we used to see caravans daily bearing coffee to send to regions west, north, and south of that territory. It is now ceded to Germany, therefore Germany has a right to be proud. I can see also that on the southern part the Germans have a right to feel eminently happy in the extension of a boundary which has enabled them to complete and obtain possession of one-third of the coast line of Lake Nyassa. They have also got a long lake nearly 100 miles long lying between Lake Nyassa and Lake Tanganyika, so that they are enabled to convey goods there by water with only a land journey of some 150 miles. If the British were anxious to send freights to Lake Tanganyika, the Germans will be enabled to carry such freights for nearly half what the British could carry them for, so that there the Germans have again obtained very fair advantages, of which they should be proud indeed. Look at the magnificent shore line of Lake Tanganyika, 363 miles of which is recognised as being the boundary to the west of German territory. Besides that they have got that most fertile estate of Rwanda, which may turn out to be the most unique region in Africa. Ten years ago a queen reigned over that region, and her son is now reigning in her stead over three millions of people. It has been reported to me that the founder of that dynasty was an Arab from somewhere near Khartoum, and his scimitar may still be seen hanging in the king's palace, so that the Germans may have the privilege of influencing a nation which may turn out to be one of the most interesting nations in Africa. That is pretty well for the Germans. From the English point of view, what privileges have you enjoyed? As I said just now, the British East Africa Company were trembling for 150,000 square miles, two-thirds of which was semi-desert, because on the east coast, near to Mombasa, the Germans had the right of occupation to a place there. Now the authority is surrendered to the British East Africa Company, and the territory is extended right up to the Juba river, so that you have 200 miles of coast added to the original 125 miles, and then you have that solid block of 500,000 square miles upon the top of the 150,000 square miles, possession of which seemed doubtful some time ago. However much we may talk about the possessions in Africa, I need not tell you that the existence of angry feelings between Germany and Great Britain would be poorly compensated for by the possession of any amount of wilderness. All we cared for was the principle that what the British people had toiled for should be secured to them. About petty details I do not think you or I would grumble very much. As the Church Missionary Society have been pleased to present me with an address, I may say that I can see unlimited scope for their work in Africa now. It will be my next endeavour to try and infuse a desire amongst the members of the British East Africa Company to prosecute their railway enterprise as far as Lake Victoria, and no doubt missionaries will be amongst those who will profit by that railway. There is a large population at Uganda and Tunguru liable to be influenced by their work, and if we can carry stores and enable missionaries to reach Lake Victoria without almost killing themselves on the arduous journey through the wilderness, I think we should hear less of disaster attending their mission. You know how Bishop Hannington and his party were massacred. You know how Bishop Tucker died after a wonderful journey of 1,100 miles on the south shore of Lake Victoria, and poor Mackay, after thirteen years' arduous work, has now succumbed. If we had had a railway to Victoria all those precious lives would have been saved. Mackay, upon the appearance of illness, might have stepped on a steamer, and then taken the train to Mombasa, and reached England by the first mail steamer, instead of being dispirited with the long land journey between Lake Victoria and the sea. Now, again, I think the settlement makes it possible to suppress the slave trade in Africa. I think a fair beginning was made by the company when they purchased the freedom of 3,000 slaves for £12,000, and allowed the slaves to go free after only four months' labour. You know the English freed the slaves at Jamaica and demanded seven years' labour, but the British Company only asked for four months' labour in order to give them their freedom, and possibly the next purchase they make they will make it without any condition whatever. With the power and possibility of engaging the labour of slaves by paying so many dollars per month, it will be found impossible for Arab traders to go through that region in future, devastating and desolating the country as I have seen it further west. It used to be the fashion for a number of caravans to band themselves together until they were about 2,000 strong, and then march through Masailand and take whatever they could. In the same way the people at Uganda used to send parties of 5,000, 10,000, and 20,000 strong into regions east of the Victoria Nile devastating large territories there, and then the slaves, after having been brought to Uganda, were transhipped and sold to Arabs. That will be rendered impossible in the future. I suppose you have a fair idea of how the work has been going on in the forests of Africa. Down to the time of Livingstone's death the fashion was for the Arab traders to start in long caravans from Zanzibar carrying beads and cloth and copper and brass wire, but now there is not the least semblance of that going on west of Tanganyika. The caravans contain simply so many bands of brigands. They march in three separate directions, and after having secured an area of 50,000 square miles they plant their flag in the centre, and from that centre proceed to slay in the most remorseless and cruel fashion every human being in order to pick up what loot they can. The banana plantations are cut down, and the entire population of that region having been slaughtered, the elephants come and complete the waste, so that the banana plantations, which once afforded nourishment for a large population, are trampled into the mire. It is about time that these doings should be stopped. This is the latter part of the nineteenth century. The whole African coast has been pre-empted, and do you not think it is a shame that when the European Powers have combined to absorb the coast line they will not pay one moment's thought to the poor inhabitants of the interior, who are now the prey of all the brigands from the Mohammedan states of the Soudan? The British East Africa Company have about 4,000 men in arms, and when this force marches to the westward and northward I should tremble for the fate of any slave dealer who will be found there. On my return to London I shall do my utmost to endeavour to inspire the British East Africa Company to be still more active, and not to rest satisfied until we are enabled to carry that momentum of civilisation which is wanted for Africa straight, without stoppage, to the Victoria Nyanza. Now gentlemen, my speech has run at great length, I am sure, in a random fashion, but you will quite understand what a very large subject it is, and that I might dilate upon it for hours. I will confine myself, then, simply to saying to the gentlemen of the Chamber of Commerce, I think, as you are most interested in cotton in this county, you may also be grateful for such a very large area capable of growing cotton as has been secured to the British possessions. I think, also, that the geographers have a right to feel immensely gratified, because, between you and me, I was rather afraid that the age of explorers was past, and that I unhappily was the last, because if Germany was going to overrun all that territory it is very doubtful whether they would be so kind to British explorers in the future as British people would be inclined to be to German explorers. And therefore I think in that unlimited space from East Africa to the Soudan states you may hear of wonderful things yet explored by British explorers in British regions. As for the Church Missionary Society, I hope they will urge on unrestingly the necessity of sending forward more missionaries to assist the poor Uganda people in the desire to enjoy the light and blessings we enjoy in this Christian country. And, gentlemen, for all these magnificent and superbly engrossed testimonials accept my thanks. For the kind and hearty reception you have given me in this room I beg you to believe that I am very grateful, and that by it I have been profoundly touched.

Mr. Stanley was then escorted to his apartments, and was heartily cheered as he left the Council Chamber.

THE LUNCHEON.

SPEECH ON AFRICAN GEOGRAPHY AND MISSIONS.

In the afternoon Mr. Stanley was entertained at luncheon in the banqueting chamber of the Town Hall. The Mayor presided, and amongst those present were the Mayoress (Mrs. Mark), Miss Mark, Miss Florence Mark, and Mrs. F. Lee, the Deputy Mayor (Alderman Sir John Harwood), Aldermen Asquith, Evans, Griffin, Heywood, Hopkinson, King, Livesley, Milling, Reade, Roberts, Schofield, Shaw, Smith, Thompson, and Windsor ; Councillors Aldred, Andrews, Ashcroft, Bagnall, Bax, Birkbeck, Boddington, Bradshaw, Brooks, Batty, Cardwell, Clay, Cuff, Estcourt, Fullerton, Gibson, Grantham, Gunson, Hampson, Haworth, Hinchliffe, Hoy, Hutt, Leech, A. Lloyd, R. Lloyd, M'Cabe, M'Dougall, Marshall, Milne, Myerscough, Needham, Newton, Norris, O'Neill, Pingstone, Richards, Roberts, Royle, Sherratt, Simpson, Smallman, E. Tatton, J. Tatton, Chesters-Thompson, Tunstall, Vaudrey, Williams, and Worthington. There were also present Mr. J. W. Maclure, M.P., Mr. William Mather, M.P., Messrs. B. Armitage (Chomlea), J. A. Beith, H. P. Brown, William Bickham, jun., Bonny, R. H. Edmondson, R. Falkner, William Fogg, A. E. Fitzgerald, A. T. Forrest, J. Farrell, T. W. Gillibrand, A. R. Gallé, Elijah Helm, R. P. Hewit, Oliver Heywood, F. J. Headlam, Thomas Hudson, J. Thewlis Johnson, James Jardine, S. Keymer, Sir J. C. Lee, Messrs. Henry Lee, George Lord, Joseph Leigh, J. H. Nodal, Samuel Ogden, C. J. Pooley, William Pollitt, S. R. Platt, J. S. R. Phillips, E. Ross, Rev. J. P. Rountree, Mr. T. D. Simcock, Rev. S. A. Steinthal, Messrs. Eli Sowerbutts, Thomas Schofield, William Henry Talbot, T. R. Wilkinson, T. Worthington, William Wood, Dr. A. W. Ward, Messrs. C. Malcolm Wood, Thomas Wrigley, and F. Zimmern.

After luncheon, the usual loyal toasts were honoured.

The MAYOR then proposed the health of their distinguished guest, Mr. Stanley. The city of Manchester, he said, had through its corporate representatives that morning, by the powers given to it, presented the freedom of the city for distinguished services to Mr. Stanley. Their feelings of satisfaction in the accomplishment of that object were, he thought, unanimous, and he expressed not only his own feelings but theirs when he said that they wished him in his future career every good wish, and that they connected with that wish the estimable lady who in the near future would become the Tennant of his future existence for better or for worse, and they very much wished that the better might in a large degree prevail. It was not his wish, and he was sure it was not theirs, to overtax the energies and the patience of Mr. Stanley in the recognition of the honours which they desired to heap upon him in Manchester in no small degree. They did not expect from him, unless it were his particular wish to delight them with his eloquence, any reply to that simple toast, because they felt that he had very handsomely responded to the addresses which were presented to him that morning. Indeed, they were thankful after his long tour in Scotland to have him there at all looking so well as he was. He had watched with much interest, and had been very much surprised that in Scotland they had not claimed Mr. Stanley as a countryman. That was really astonishing, and he was sure they would all feel it that they had not claimed Mr. Stanley as a Scotchman. Well, he did not care where he came from—he was a very good fellow. The time was very limited, and they could very well understand after the exhaustion of a lengthened speech on the previous night and that morning Mr. Stanley's recuperative power should be somewhat considered. He (the Mayor) thought it was good for him to have a little sea air, and accordingly he had made arrangements with the directors of the Ship Canal to take him for a short trip over the canal course. Of course that was entirely relaxation and rest, for which Mr. Stanley had been pleading that morning. There was one subject that was very near to Mr. Stanley's heart besides that to which he had previously alluded, and it was that a steamer should be placed on the Lake Victoria Nyanza for the use of missionary enterprise. It would cost £5,000, and towards that £1,000 had already been contributed, and if he could excite any of their sympathies in this direction he would be very glad. Mr. Stanley was very much in earnest about the value of missionary enterprise in Central Africa, and if any of them felt disposed to "hedge a bit," they might very well contribute to this good purpose. He proposed to them with all heartiness, as representing the cordiality of Manchester, "The health and happiness of Mr. Stanley."

The toast was heartily honoured.

Mr. STANLEY, in replying, said he was sunk in a profound reverie about certain ancient geographers and writers upon the science of geography when the Mayoress proposed to him a conundrum, which he would reveal in order that his hearers might assist him in its solution. The conundrum was, When will Mr. and Mrs. Stanley be entertained here? It quite set him aghast. When he saw he was down to reply to the toast of "The Guests," he thought he would get some fine original ideas ready, but that conundrum upset his calculations. He left it to the people of Manchester to answer the question. Certainly if the epidemic of good nature would continue, it very likely would be shortly. One of the grandest things he had done in old Africa had been, he thought, to reconstitute the old geography. From the time of Homer down to the beginning of the present century there had been certain localities mentioned as the place where the pigmies of Africa lived, and at a certain other place, which was not very exactly located, the Mountains of the Moon were supposed to be. Homer located the Mountains of the Moon somewhere about the equator. Three lakes also were mentioned, and these were assigned to various localities by successive geographers, until in 1818 the Scotch geographers just erased all the lakes from the map of Africa and drew the Mountains of the Moon as a prodigious range of mountains extending from the Gulf of Guinea to the Gulf of Aden. If there was any member of the Geographical Society of Manchester present he begged him to lay this earnestly to heart. Let him keep strict watch and ward over these interesting features of Africa, especially over Lake Victoria, Lake Albert

Lake Albert Edward, and the Mountains of the Moon. Don't let them be scattered about Africa. With regard to the placing of a steamer on Lake Victoria, in 1875 he made an appeal on behalf of a certain black sovereign situate near the equator, who was growing cotton and sugar, corn, bananas, and plantains, who could supply his guests with fifty bullocks at once, or enable them to bathe in plantain wine or milk, or could smother them in honey. He made an appeal in that monarch's behalf because he had stated that he wished to see the light—such light as white men saw. He wrote an appeal, which appeared in the *Daily Telegraph*, and the English people made a very liberal response. A mission was sent to Africa, and established itself in Uganda. Fifteen years after that appeal was made he came back to the neighbourhood of Lake Victoria, little thinking that that letter had produced any results. At that time he had been spending two and a half years in the wilds of Africa fighting almost every day, not only against cannibals and the pigmies of the forests of Africa, but against the evil instincts of human nature. There was plenty of good in human nature, whether wild or civilised, but it was so covered up with evil that one had to be very patient and penetrating in order to reach it. After two and a half years' experience amongst the wilds of Africa and in the forest solitude, not only himself but his entire expedition were hungering after something more approaching the civilisation of the day. At last, after infinite trouble, they saw the Christian cross domineering a humble church, and then they knew that they were gradually approaching near to the influence of civilisation. That church was the result of the seedling he had dropped from Uganda in 1875, and it was there to welcome not only himself but his entire expedition of 600 people. When he saw the Christian cross on the top of the church he thought of the words, "Cast thy bread upon the waters and thou shalt find it after many days." Here in sight of this hospitable mission there was abundance of tea and coffee, and potatoes and meat, and there was also wine to cheer the traveller, as well as books and newspapers. It was then he felt that he had arrived within measurable distance of the people of Manchester. That poor missionary, who had welcomed them after their two and a half years' experience in the forest solitude and amid barbarism indescribable, was dead. He had died for want of the very thing which the Mayor had that day stated he (Mr. Stanley) had at heart, namely, the establishment of a steamer on Lake Victoria. Twelve years ago that missionary started from England with the engine of a small steamer. Through circumstances natural to savagedom, parts of the machinery were left at certain places, and somehow or other the missionary was unable to gather them together for the boat, so that when he (Mr. Stanley) saw the missionary in 1889 (August 28) he said to him, "Well, Mr. Mackay, where is that steamer I have heard so much about, and that has been twelve years in building?—almost as long as the Temple of Solomon took to build at Jerusalem." "The trees are in the forest." "Have they not been cut down yet?" "No, but we hope to do it." "The machinery?" "Oh, you can go to the blacksmith's shop and see that it is in process of construction." He (Mr. Stanley) went to the blacksmith's shop and saw two black engineers painfully screwing one screw in per hour. He said, "My dear Mr. Mackay, why are you wasting your precious life and talents on this work? Why don't you appeal to the people of England to send you a steamer properly built and ready to be launched on the lake? The people of England don't understand how to send out missions, and if ever I get an opportunity of speaking to them I will." The English people sent a missionary into the interior of Africa without proper equipment, and because they spent a few thousand pounds they expected to have 50 or 100 converts made to order. They did not remember that the missionary, before he could begin the work of conversion, must first of all learn the language and conquer the fever. They never thought of the inclemency of the climate, of the barbarism in the centre of which he must live and which he must enlighten. What with learning the language, building his house, and looking after his earthly necessities three times a day—breakfast in the morning, luncheon at noon, and dinner in the evening—the missionary's time was already gone, and days grew into weeks, weeks into months, and months into years, and there were no converts, and the English people became impatient. Let them think a little. If they sent out missionaries properly equipped they would make any number of converts, but how, under the circumstances, poor Mackay and his assistants had been able to turn out 5,000 in ten years was a perfect marvel to him. In order to make that mission succeed, and in order to start the expedition fifteen years after it had been established, let them put a little sense together. He had given £50 towards it, and the respectable manufacturers and merchants of Manchester could surely do more than he, a poor impecunious traveller. Let them give their money to the Mayor, and ask him to forward it to the Lord Mayor of London as a contribution from the merchants and manufacturers of Manchester, who were grateful to God for the blessings they enjoyed, and wished to disseminate them over Africa. Let them put down a handsome sum and put a steamer on Lake Victoria, not only to carry the Bible but also to carry their cotton among those 10 million on the shores of the lake. He had spoken fairly and squarely, and it was for them to answer him. When he was in Manchester, in 1884, he told them what yards upon yards of cotton they could scatter up the Congo among the 35 million of people there. But he was impractical, and the people of Manchester did not believe him, and now the people engaged in business in the Congo basin were making 100 per cent, which the Manchester merchants might have had. But, no, he was a traveller and impractical. Now, in fair and grim earnestness he told them they were the people who were impractical. They could not even look at this thing fairly and squarely in the face; they could not believe that a reporter of the *New York Herald* could tell them plainly and deliberately a little bit of common sense. Trade in Africa was taken away from the English people by Germany and Belgium, and if they did not stir there would be nothing left of broad Africa for the English. They were indebted to Lord Salisbury for having stretched out his hand to save one field. He asked them to work up to it, to be equal to the occasion, to prove to Lord Salisbury that he had not acted for an ungrateful people. He asked them to contribute nobly and freely, as became the merchants and manufacturers of Manchester, to the fund for the steamer on Lake Victoria, and not to be the last and the least of the contributors to the railway to that lake. With the profoundest gratitude, and with sincere affection for all present, he thanked them for the patient hearing they had accorded him; and in conclusion he expressed the hope that if ever he should be able to boast of a Mrs. Stanley he would have the pleasure of introducing her to the people of Manchester.

Sir JOHN HARWOOD proposed "The Health of Mr. Bonny and other Members of the Expedition." He said Mr. Bonny had been one of Mr. Stanley's most trusted and most faithful companions in all the hardships and trials through which he had passed. It had been enough to read how Mr. Bonny was left for 464 days of anxious suspense with about 250 men, and how day after day he saw those men sink away under the trials and hardships and deprivations to which he and his companions were subjected, till, when Mr. Stanley returned, Mr. Bonny's staff and companions were reduced to between 70 and 80. They were all grateful to Mr. Stanley and his followers for the influence they had exerted against the traffic in human beings.

Mr. BONNY, in replying to the toast, which was cordially drunk, said it was because he and Mr. Stanley's other companions knew the career of Mr. Stanley, the nature of the journey he was about to enter on, and the object in view, that not only they but thousands of others were ready to join him in that expedition. They had no idea, of course, when they left their country of the difficulties exactly they would have to meet; but, finding themselves in the midst of difficulties, he thought they put their shoulders to the wheel and braved them. He paid a warm tribute to the manner in which their distinguished leader grasped the situation and reorganised their expedition after his return to the decimated rearguard, of which he (Mr. Bonny) was the only surviving white man, after the long interval of 464 days. He related also how, when he himself was fever stricken, and threw himself on the grass half unconscious, while the caravan had passed on, he saw a native armed with spears, who came up to him, and after looking at him for a time went away and brought him some milk, which restored him. Although he tried to intimate to the native that if he would come into their camp he would reward him, he never saw the man again.

He related the anecdote to show that these people were such as might eventually be traded with freely.

Mr. **Henry Lee** proposed "The Mayor and Corporation of Manchester," congratulating the Mayor on being the principal person in the city, which he took to be the commercial capital of England, if not of the world. The Corporation had always been foremost in carrying out work of a most valuable character, and had set an example to other corporations throughout the land. They were to have a very large extension of the city in the course of time, and he hoped that extension would keep going on till Manchester became one of the largest corporations in the kingdom. It was said that the power of municipal corporations was to be extended, and that there would be committed to them many things with which the Imperial Parliament had been accustomed to deal. He hoped it might be so, for he believed there were many things which the Corporation could do better than they were done in the House of Commons.

The toast having been honoured, Mr. Alderman **Heywood** replied, and the proceedings terminated.

VISIT TO THE SHIP CANAL WORKS.

At the conclusion of the luncheon Mr. Stanley made a short tour of inspection along the banks of the Manchester Ship Canal. Mr. Stanley was accompanied by Mr. Bonny, the Mayor and Mayoress of Manchester, Miss Mark, Mrs. F. Lee, Miss Florence Mark, and a number of members of the Reception Committee. The party drove in open carriages from the Town Hall to the docks at Pomona, where they were received by Sir J. Lee (deputy-chairman of the Ship Canal Company), Mr. Alderman Bailey, Mr. Joseph Leigh, Mr. Henry Boddington (directors), and Mr. A. H. Whitworth (secretary). A train, consisting of two carriages and an open wagon, awaited the party, and on entering the carriages the visitors were conveyed past the docks at Salford to the Barton lock. At one point of the journey a length of the canal was partly filled with water, giving the visitors an excellent idea of the waterway when completed. The sandstone cuttings at Barton were inspected with much interest. Returning from Barton lock a pause was made to enable Mr. Stanley to view the operations of the steam digger which was at work in the cutting below. The distinguished explorer appeared to be thoroughly pleased with his flying visit along the canal, and to be much impressed with the gigantic proportions of the enterprise. Although time did not permit of an exhaustive inspection of the canal, Sir Joseph Lee supplied Mr. Stanley with all the details of the undertaking, at the same time expressing his sanguine anticipations that the scheme would be completed in the stipulated period. From Pomona the party drove to the Town Hall.

RECEPTION AT THE TOWN HALL.

The Town Hall was crowded in the evening by a brilliant company, when a reception was given by the Mayor and Mayoress in honour of Mr. Stanley's visit. The number of ladies and gentlemen present was flatteringly large, some 1,300 having accepted the Mayor's invitation. The Mayor and Mayoress received visitors in the State apartments from half-past seven for about an hour, Mr. Stanley being present. For the occasion the official apartments were tastefully decorated with plants and flowers, and light refreshments were served. In the large hall the band of the 9th (Queen's Royal) Lancers played a selection of appropriate music under Bandmaster

W. Winter, while at intervals vocal pieces were capably rendered by a male choir, chiefly drawn from the Cathedral. During the evening, too, the police band played in the Sculpture Hall. Mr. Stanley, who wore his Belgian decorations, was of course the centre of attraction, and during the evening promenaded the principal rooms and corridors with the Mayoress. Amongst the guests, besides members of the Council and Corporation officials, were the Mayor of Salford (Mr. B. Robinson), the Mayors of Bolton and other Lancashire towns, Archdeacon Anson, Principal Ward, Mr. Herbert Birley (chairman of the Manchester School Board), Mr. G. F. Fisher (chairman of the Manchester Board of Guardians), Mr. E. S. Heywood, Mr. C. J. Heywood, Mr. H. Dunckley, Mr. Alderman Forrest, Mr. Alderman Bailey (Salford), Mr. Joseph Leigh, Mr. E. J. Broadfield, Mr. S. Hazzopulo, Mr. E. Guthrie, the Rev. Dr. M'Laren, Mr. I. Levinstein, Colonel Clark, Mr. Henry Lee, Mr. Bonny, Mr. S. Brown (Town Clerk of Salford), and Mr. R. Barclay.

The address presented to Mr. Stanley by the Manchester Corporation, embodying the expressions contained in the resolution of the Council, and placed in the casket, is illuminated on vellum, backed with white watered silk, and ivory rollers attached to the top and bottom. It is an elaborate and descriptive work, illustrating some of the principal events of Mr. H. M. Stanley's late African expedition. In the top left-hand corner is placed a coloured portrait of Stanley, enclosed within the semi-circle (described by the letter C), brilliantly embossed in gold. Immediately under the C is placed a map of Africa, with a telescope, quadrant, and compass, amidst palm leaves, ferns, and other tropical plants, separating five pictures continuing along the left-hand side and bottom of the text. Immediately under the map of Africa, Stanley and his attendants are shown emerging from the forest after a march of one hundred and sixty days. The next picture contains Stanley conferring with Kavalli, chief of the Babiassi, with a group of attendant Ethiopians. Beneath this is a representation of the village of Wambutti dwarfs, in the dark recess of a gloomy African forest. The left-hand corner terminates with a picture of Panga Falls. At the extreme right-hand corner is embossed the seal of the Corporation of Manchester, emblazoned with gold and in proper colours. The intervening space is occupied by a sketch of Ruwenzori (the Snowy Mountain), identified by Stanley with the "Mountains of the Moon." The principal words in the text of the address are displayed in brilliant colours, and it is signed by the Mayor and Town Clerk. The effect of the whole work is that of a richly emblazoned legal document.

The address of the Manchester Geographical Society is chastely illuminated, and has a frontispiece sketch of the Town Hall. A suitable border surrounds the presentation title, embracing tastefully-coloured representations, of the Geographical Society's stamp, &c. The whole is bound in purple morocco, with inlaid monogram and border on the front of the cover, and the Manchester coat of arms on the back, and is contained in a leather box.

The addresses from the Chamber of Commerce and the Church Missionary Society were similar to the one presented by the Manchester Geographical Society, but not of so elaborate a character, although very beautiful.

MR. STANLEY'S DEPARTURE.

Mr. Stanley left Manchester by special train for London. He was accompanied from the Town Hall by the Mayor and Mayoress, their daughters, the Town Clerk, and the Chief Constable. The party were driven in open carriages, preceded and followed by mounted policemen. Mr. Stanley was given a most cordial reception along the line of route, and several hundreds of people followed the procession to London Road Station. At the station the party were joined by Mr. T. R. Wilkinson and Mr. Pollitt, general manager of the Manchester, Sheffield, and Lincolnshire Railway Company, by whom the special train was run. The Mayor accompanied Mr. Stanley to London. Before leaving, Mr. Stanley expressed to the Mayor, the Town Clerk, and the Chief Constable his hearty thanks for the kind reception he had been accorded, and his admiration of all the arrangements that had been made for his comfort and convenience.

ADDRESS TO THE TYNESIDE GEOGRAPHICAL SOCIETY BY SURGEON T. H. PARKE, D.C.L., ON INCIDENTS CONNECTED WITH THE RELIEF OF EMIN PASHA.

Mr. Albert Grey presided, and there was a large and brilliant gathering.

Surgeon Parke, who was received with enthusiastic cheers, said : Before saying anything about my African experiences, I wish, in the first place, personally to thank the President and members of the Council for the honour they have conferred upon me by electing me a Corresponding Member of the Tyneside Geographical Society—a compliment for which I feel deeply grateful. I have steadfastly refused all invitations to lecture or give an address anywhere since my return from Africa, partly because my duties in the army prevent me, and mostly because I dislike speech-making very much. My only excuse for my presence here to-night is the repeated entreaties of your energetic Secretary, Mr. Smithson, whose unwearied exertions I had not the moral pluck to resist.

THE EXPEDITION.

The Emin Pasha Relief Expedition, as you all know, was started in response to an appeal direct from Emin himself—his letters for help touched the sympathies of a benevolent few, principally Scotchmen—who subscribed about £20,000 sterling, with which they equipped an expedition to send him relief. With characteristic shrewdness these gentlemen invited Mr. Stanley to take command, as they knew no better man for the purpose. He at once cancelled his engagements in America, and at great personal inconvenience and considerable pecuniary loss, came to England, consulted with the committee, and after organising the entire arrangements, he left England for Zanzibar, on January 21st, 1887, stopping for a few days in Cairo to complete negotiations with his Highness the Khedive, who had subscribed £10,000 from the Egyptian Treasury.

HOW DR. PARKE JOINED IT.

It was owing to this short stay in Egypt that I had the good fortune to make his acquaintance. I had just returned from the Nile expedition for the attempted relief of Gordon, and was at this time stationed at Alexandria, where I met Major Barttelot on January 20th. He was an old campaigning friend of mine, and I asked him where he was going. He said that he was going with Stanley for the relief of Emin Pasha and on inquiring who Emin was, he replied that he was "some fellow in the middle of Africa who wanted to get out and couldn't." I was then getting rather tired of the routine of service life, and immediately said that I should like to go also ; but he discouraged me by saying that Stanley had already selected his officers from amongst over 1,000 applicants. However, as Stanley was to arrive a few days later, on the 27th, I determined to waylay him ; and, directly the P. and O. steamer arrived, I picked up courage, sent in my card, and was granted an interview of under two minutes. When I departed from him it was with the conviction that my services would not be required. I wished him success, and thought nothing more of it until next evening, when I received a telegram at a dinner party from "Stanley to Parke. Will you accompany me on the expedition?" I answered "Certainly." I went by train to Cairo that night, got leave from the military authorities on the same conditions as Barttelot and Stairs, viz., without pay; returned again to Alexandria, gave myself three days to collect my kit, and started for Zanzibar with Mr. Stanley on the morning of the 3rd February, 1887, having said goodbye to numerous friends at the railway station, many of whom said, "Lucky fellow," and others, "Poor devil."

OFF TO THE CONGO.

On the 22nd of February we arrived at Zanzibar, re-embarked on board the B. I. s.s. Madura, and two days later steamed away to the Congo, with the entire expedition on board, consisting of 9 Europeans, 13 Somalis, 62 Nubians, 623 Zanzibaris, and Tippoo Tib, the famous ivory hunter, with 90 of his followers, most of whom were women belonging to his "harem." These creatures were extremely dirty and very seasick, for which distressing complaint they insisted on being treated by liberal doses of "Eno" and "seidlitz," as they considered any effervescing medicine a specific. We touched at the Cape to coal, and arrived at the Congo on the 18th of March, having only had three deaths on board, an unprecedented immunity from sickness. Ten per cent is the usual reduction from the numbers physically fit. Ours was 1½ at the utmost. We were now conveyed in smaller steamers 108 miles up the Congo to Mataddi, where the expedition and all equipment were disembarked. Here final arrangements were made, and we marched away on the 22nd for Stanley Pool, on the Upper Congo, 345 miles of which distance we accomplished in exactly one month.

THE OVERLAND MARCH.

This was our first marching experience, and it certainly was unique, for every atom necessary for the relief was carried upon men's heads, as there was no other means of transport. Each man carried 100lb. in weight. The march was over a picturesque, grassy, undulating country, well watered and wooded, and marked by an ordinary caravan track, along which we walked in single file, but as the men were in very soft condition the advance and rear guards were separated at times by several miles. His Majesty the King of the Belgians generously assisted the expedition by placing all the available steamers and barges on the Upper Congo at Mr. Stanley's service, and on April 25th the first detachment of the expedition left on its way up the river for Yambuya, a distance of 1,100 miles, which was reached on the 16th of June. The Congo river has, I believe, 7,000 miles of navigable water, including the reaches between the cataracts. It is a very dark and muddy water, and flows with such velocity that fresh water has been found as far as 300 miles out at sea. It varies in width from one to twenty miles, and its banks are low, swampy, and almost entirely covered with forest. On the 28th of June, four and a half months after leaving London, Mr. Stanley, his European servant, Stairs, Nelson, Jephson, and myself, with 389 blacks, left Yambuya as the "advance column" to go and find Emin, leaving behind a strongly-stockaded position five Europeans and 260 blacks to form the "rear column." It was necessary to divide the force into two columns, as the greater portion of the baggage and a large number of the men had not yet arrived, owing to the insufficiency of the Congo flotilla to transport the expedition from Stanley Pool to Yambuya in one journey.

THE FORCED MARCH THROUGH THE FOREST.

Emin's cry was so urgent that Mr. Stanley preferred to risk a quick advance by forced marches with a light column rather than court a disaster by delay, and repeat our too-late experiences on the Nile. It was now that our troubles really commenced, as we plunged into an unknown forest, never before travelled through by white man or Arab. This forest turned out to be about the size of Germany, France, and Belgium put together, and after 160 days spent toiling in its gloomy twilight the column emerged into daylight on the plain, but only 174 souls remaining out of 389, or a loss of four men every three days while we were in the forest; and with these worn-out wretched skeletons we were going to relieve a Pasha who had a few thousand warriors, and was hemmed in by savage tribes. This was not very cheery to contemplate; nevertheless, it was with pardonable emotion that everyone expressed himself thankful for deliverance from that forest, and thought they had never seen such a lovely country as was before them. The line of demarcation between the forest and the plain was very distinct, as the forest ceased abruptly. During these 160 days we were obliged to cut our way not only through dense undergrowth and jungle, but also through hostile and savage aborigines. The dwarfs or pigmies were well proportioned, fairly intelligent, bright and cheery when tamed, but wild and barbarously vindictive in their native state. They were covered over with fine hair or fur, and possessed a sense of modesty, at least as far as the resources of the forest would admit. Their usual costume consisted of a belt of rattan cane round the waist. The mortality amongst our men was principally due to disease, wounds, and starvation. The native men always carry a bow and quiver of arrows, which they can shoot to a distance of over 100 yards with accuracy, and unless one is very smart they generally have the first shot too. These arrows are beautifully designed and worked. The heads are generally barbed, and are made from the crude iron ore in native foundries, where they have bellows and coke, and hammers and anvil. They are generally smeared with deadly poison, as was illustrated at the action of Arasheba, where every man wounded with a poisoned arrow died, except Lieut. Stairs. Poisoned wooden spikes are sometimes placed in the ground on the approach to a village, and these inflict barbarous penetrating wounds in the naked feet, utterly incapacitating the victim, as invariably the spike breaks off in the foot. We also lost many from desertion, and this proved Stanley's wisdom in selecting the Congo route, for if the Zanzibaris will desert in the friendless forest, surely they would do so in much greater numbers if they had started from the East Coast, where they all knew the country, and it is their habit to desert and take their rifle with them. It is this custom of theirs which has wrecked so many expeditions from the East Coast. The horrors of starvation deprived us of most of our men. For weeks we were obliged to exist by grazing on the leaves of plants, fungi, herbs, forest fruits, with an occasional plantain, and the scrapings of a forest bean which tasted like horse chestnut. We also ate Mr. Stanley's donkey. Even during our worst days, if a Zanzibari had but three forest fruits, he would readily give two out of three to his white companions. In one camp alone we were obliged to leave a white man, Captain Nelson, and fifty-six blacks, all unable to march further from the effects of starvation, and we had no means of transport for them. We marched on expecting food every day, until 23 days had passed before we were able to send back relief, and then only Nelson and three men remained to tell the tale and protect the baggage we had left. The carcases of the rest of the party lay about the camp in various stages of decay, having perished for want of food, and their bleached bones are there a monument to fidelity to duty.

SUPERIORITY OF THE EUROPEAN PHYSIQUE.

Although the Europeans and the blacks lived under the same conditions, yet the mortality among the latter was much greater. Our food was the same, with the exception of tea and coffee, which lasted us two or three years, the remaining European provisions we carried were not worth considering. All our experience goes to show that the white man can live very well in Africa, provided he treats himself properly. He should not go out there too young, and he should come home every three years. There never was a day that we could not walk down the blacks, either our own men or the aborigines of any part of Africa which we passed through. Undoubtedly the Zanzibaris carried loads, which we did not; but then they are accustomed to that work from their youth. Neither the Nubians nor Somalis were obliged to carry loads. Yet out of 13 Europeans engaged on the expedition 11 emerged out of Africa safe and sound, one was murdered, one died, and seven marched across Africa. Out of 623 Zanzibaris 225 returned; out of 62 Nubians 12 returned; out of 13 picked Somalis one returned. There is no doubt that the tenacity for life is influenced by education and moral pluck. We valued our lives more because we have more to live for, and "never say die," whereas the blacks, tired out by fatigue and fever, will simply sit down on the roadside and not attempt the same effort to get on and reach camp so as to be able to make a fresh start next morning, although they are well aware what will happen to them, for the wild natives follow up the track of the caravan just as sharks do a ship at sea. Each European who crossed Africa suffered from about 150 attacks of fever. The blacks also suffered from intense fever, but not quite so frequent. I noticed this want of stamina amongst the Egyptians and Nubians on that memorable march across the Bayuda Desert to reach the Nile at Metammeh, when the only men I saw fall out from fatigue and thirst were black men. The British soldier of mature age showed much more staying power.

THE VALUE OF VACCINATION.

Now, however, our staying power was to be taxed or tested in another way for which we did not bargain. We had reached the Albert Lake on the 13th December, 1887, at the very point and about the very date when Emin expected us, according to communications which he had received from Zanzibar. Yet we were obliged to stay until the 8th of May, 1889—just one year and five months later—until Emin and his satellites had made up their minds to come away; and even then they were so undecided that half remained and half came away. During this interval we were not idle, as we returned into the shades of the forest, built a fort, and farmed some acres of ground to keep off hunger, while Stanley returned alone to bring up the rear column, which was the grandest but saddest episode in the history of the expedition. On his arrival at Bangala, he found only one European present out of five whom he had left, and only 97 men out of 276. Two valuable officers were dead, both Barttelot and Jameson. Smallpox was raging, but owing to the precaution which we had taken by vaccinating our men on board ship, only four out of the entire force were attacked, and none died. Whereas the mortality amongst the Manyuema and camp followers, who had never heard of vaccination, was immense.

EMIN PASHA'S POSITION.

It has been written that we brought Emin Pasha away against his will, but this is a gross libel. Many a time I have heard Stanley say that our object was to carry relief in ammunition, and not to bring Emin away. I myself, in those days, thought the remark inconsistent, because we would have nothing to show when we reached the coast, but Stanley would complain that we had barely enough men left to drive through to Zanzibar ourselves, without the responsibility of looking after the Pasha and his helpless followers. But what was poor Emin to do, and where was he to go, if he did not avail himself of our escort to the coast? His own soldiers had actually made him a close prisoner, and were taking him north with Mr. Jephson, probably to kill them, when they were driven back by the providential advance of the Mahdi's forces.

Then they changed their tactics, and designedly allowed him to visit our camp at Kavalli, so that by their cunning and stratagem they might capture the entire relief expedition with all ammunition.

HIS CHARACTER AND ATTAINMENTS.

Emin is a wonderfully interesting companion, but he had lost all control over his province ; he is excessively good-natured and extremely polite ; a great scientist, and qualified to practice medicine. He speaks twenty-two languages, thirteen of which he can read and write ; and without the least hesitation would tell the scientific name of any insect, bird, or plant which might be brought to him. His people were useless—troublesome and diseased, aggravated by intemperance, vice, and misconduct. He has often pointed out some of his chief officers, and told me their histories of crime. Many of them were exiled convicts from Egypt as murderers and robbers, and these were the men on whom he was obliged to depend, and for whom so many gallant lives were sacrificed. They preferred to live coarse luxurious lives in the equatorial province, rather than contribute towards earning an honest livelihood in Egypt. Besides achieving the object of the expedition, some very interesting geographical problems were solved, and a country opened up which ought to be a mine of wealth for British enterprise, valour, and industry. The money used in barter with the natives consists principally of beads and cowries for ornaments, brass rods, calico, and fancy coloured goods. Civilisation will advance with the railways, and until they are made Africa will never be opened up and the slave trade will never cease. Ivory hunters have no other means for the transport of their tusks than on the backs of slaves. Of course, if you can stop ivory traffic then you can stop the slave trade, as they are synonymous.

On the 4th of September, last year, the relief expedition arrived at the coast and that very same evening Emin, who had not tasted civilisation for fourteen years, met with an accident which nearly cost him his life. He fell headlong through a window, a distance of 30 feet, on to his head, and fractured the base of the skull. However, he survived, and, I regret for his own sake, has returned again a wanderer into Africa. I received a letter from him a few weeks ago, and I find that he is nearly well again. The Egyptian subjects whom we escorted out have returned to their own country.

Thus ended the relief expedition after exactly three years' hard work in Africa, during which time each member is satisfied in his own conscience that he has done his duty, and that is the most gratifying consolation one could have. We are all unanimously indebted to Stanley's undaunted courage and resource for its completion ; and when you have read "In Darkest Africa" you will be better able to judge if anything has been gained by the expedition or whether "the game was worth the candle." Never was there a work begun, carried out, and ended from more unselfish and humanitarian motives by more gratuitous and self-sacrificing means.*

HONORARY DEGREES FOR MR. STANLEY AND SURGEON PARKE.

On Tuesday afternoon, at a Convocation held in the Banqueting Hall of the Castle, at Durham, the honorary degree of D.C.L. was conferred by the University upon Mr. Henry Morton Stanley (in absence) and Surgeon Thomas Heazle Parke, in recognition of the services rendered by them in connection with the Emin Pasha Relief Expedition. The Sub-Warden (Professor Pearce) presided, and there were also present Canon Farrar, Canon Kynaston, Dr. Philipson, Dr. Heath, Dr. Page, Dr. Plummer, Rev. A. Robertson, Mr. J. R. Redmayne, Mr. F. B. Jevons, Mr. E. J. Marshall, Rev. J. R. Short, Mr. A. Beanlands, Rev. J. T. Fowler, Mr. W. K. Hilton, Mr. P. J. Harwood,

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* We have pleasure in publishing these notes of an address to the Tyneside Geographical Society by Surgeon-Major Parke, by the permission of that Society.

&c. There was a large and fashionable gathering present, the attendance including a great many undergraduates. Surgeon Parke, who is the guest of Dr. Philipson, at Newcastle, travelled over to Durham with that gentleman, and as he entered the hall was received with cheers by those present.

The Sub-Warden having opened the Convocation, and proctors having made the requisite declarations, the Sub-Warden said : It is proposed to confer the honorary degree of D.C.L. on Henry M. Stanley. Is it the pleasure of the house to assent to this proposal ?

The assent was denoted by hearty cheering, on the subsidence of which the Sub-Warden said : In conferring this degree the University desires to show its appreciation not only of the indomitable perseverance, courage, and wisdom with which Mr. Stanley and his band of devoted companions—one of whom we have amongst us to-day—overcame difficulties apparently insurmountable, not only of the value of his contributions to geographical knowledge, by which half a continent has been laid open, mapped, and delineated, but also of the services which he has rendered to the causes of civilisation and religion. The development of honest, legitimate commerce, the large and growing extension of Christianising efforts, and the true progress of the races of Central Africa towards a higher and nobler standard of humanity, owe much of their existence and vitality to the unwavering purpose and happy achievements of one of whom Englishmen will always be proud. By the authority of this University I admit Henry M. Stanley to the honorary degree of D.C.L. in his absence.

The Sub-Warden then announced that it was proposed to confer the same degree on Mr. Surgeon Parke, and again assent was given in cheers.

Surgeon Parke, who wore his uniform as surgeon of the 2nd Life Guards, with the decorations enumerated below by Dr. Philipson, in addition to the cap and gown of a Doctor in Civil Law, then advanced up the room, amid great cheering, and was met by

Dr. Philipson, who introduced him to Convocation in the following terms: Mr. Sub-Warden and proctors, I present to you Thomas Heazle Parke, surgeon of the 2nd Life Guards, licentiate of the King and Queen's College of Physicians of Ireland, honorary fellow of the Royal College of Surgeons in Ireland, the recipient of the gold medal of the British Medical Association awarded for distinguished merit, medallist of the Royal Geographical Societies of London and Antwerp, honorary fellow of the Royal Scottish, Tyneside, and Belgian Geographical Societies, the medical officer of the Emin Pasha Relief Expedition in Central Africa under the renowned explorer, Henry Morton Stanley, to be admitted to the honorary degree of Doctor of Civil Law. Surgeon Parke has served on the Army Medical Staff for nine years, and his career has been distinguised from its commencement. He has been engaged in perilous undertakings, requiring for their fulfilment the qualifications of fortitude and courage. In 1882 he was engaged in the Egyptian campaign, subsequently in the Nile campaign, and is one of the survivors of Abu Klea. When in charge of the cholera camp at Tel-el-Kebir, when two-fifths of the English soldiers were prostrated by disease, he gave proof of his ability and courage, and was complimented by Surgeon-General Irvine. He possesses the Egyptian medal, with clasp, the Khedive's star, the brilliant star of Zanzibar, and the third and fourth class Medjidieh. Surgeon Parke was the latest of the volunteer officers who applied for membership in the Emin Pasha Relief Expedition, and wrote with his own hand the terms of the agreement to render "loyal and devoted service" gratuitously. For three years, through the perils of the Dark Continent, he did his work most nobly. Through difficulties, dangers, and disasters which perhaps the annals of history can scarcely equal, he obtained the goodwill and esteem of his illustrious chief and his brave companions. Pestilence, war, and famine brought the opportunity for the exercise of that watchful skill, gentle patience, and sweet courage whereby another name has been added to the long roll of the heroes of the medical profession.

The Sub-Warden said: Mr. Surgeon Parke, I beg to assure you, in the name of the University, of the great pleasure with which we welcome you to become an honorary member of our body. You have ennobled a noble profession by the manner in which you have illustrated its beneficent power. So long as men read the story of the strange and marvellous journey into the dark and unknown continent, so long will they admire and honour the devotion and skill and absolute self-effacement happily so frequent in your glorious profession, but never more strikingly shown and illustrated than by Surgeon Parke. You have well sustained the reputation not only of an Englishman but of an English doctor. By the authority of the University I admit you to the honorary degree of D.C.L.

The Sub-Warden then shook Dr. Parke by the hand and the ceremony concluded.

THE ENGLISH AND THE GERMANS IN AFRICA.

CESSION OF HELIGOLAND.

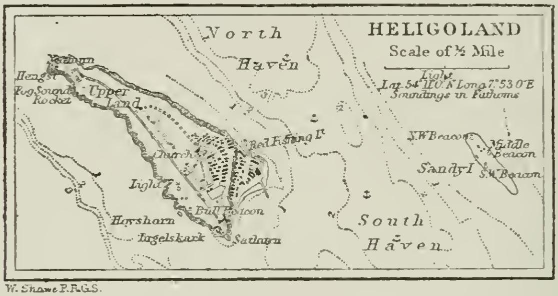
The following notes from the *Manchester City News* will be of interest in reference particularly to Mr. Stanley's second address in the Council Chamber:—

For some time past it has been recognised that it was to the mutual advantage of England and Germany that the sphere of influence of each country in Equatorial Africa should be properly defined, so that, as far as possible, the dangers of disputes should be removed. Lord Salisbury has now concluded an agreement with the German Government, subject to ratification by the Parliaments of both countries. The agreement, in addition to matters relating to Africa, provides for the cession of Heligoland to Germany. It has given the greatest satisfaction in Germany.

As to the African portion of the settlement, what happens is this: We gain an absolute protectorate over Zanzibar and all the territory occupied or claimed by the Germans north of that point, including the sultanate of Vitu and the territory between it and the Juba. This gives us control of the east coast from Zanzibar to Abyssinia, about five hundred miles in length. Further south, where the original German claim comprised the whole of the "hinterland," or territory between their sphere of influence on the east coast and the Congo State in the west, that claim is surrendered as to the territory between the Congo and Lakes Tanganyika and Nyassa. North of that point, however, up to the first degree of south latitude, Germany is allowed to carry her borders up to the Congo State. Finally, down in the south-west, where the question is the eastern boundary of the German west-coast possessions, a further concession is made by the shifting of the boundary line from the twentieth to the twenty-first degree of east longitude, and along the eighteenth degree of south latitude up to the Zambesi. The most serious part of these concessions is undoubtedly that of the territory between Victoria Nyanza, Tanganyika, and the Congo State. By the change the British territories in the South are finally severed from the Nile and the Nyanza region, but Lord Salisbury has secured a free and unfettered right of transit for British subjects and goods across the German isthmus thus interposed. He has also saved the Nyassa settlements and the much-talked-of "Stevenson road."

Heligoland is an island in the North Sea, about twenty-five miles from the mouth of the Elbe. The area, inclusive of the adjacent island termed "Sandy," is three-quarters of a square mile. The population, as taken at the census of 1881, was 2,001, and is now about 2,200. It is the smallest organised British colony. Heligoland was surrendered to the British arms in 1807, and formally ceded to Great Britain by

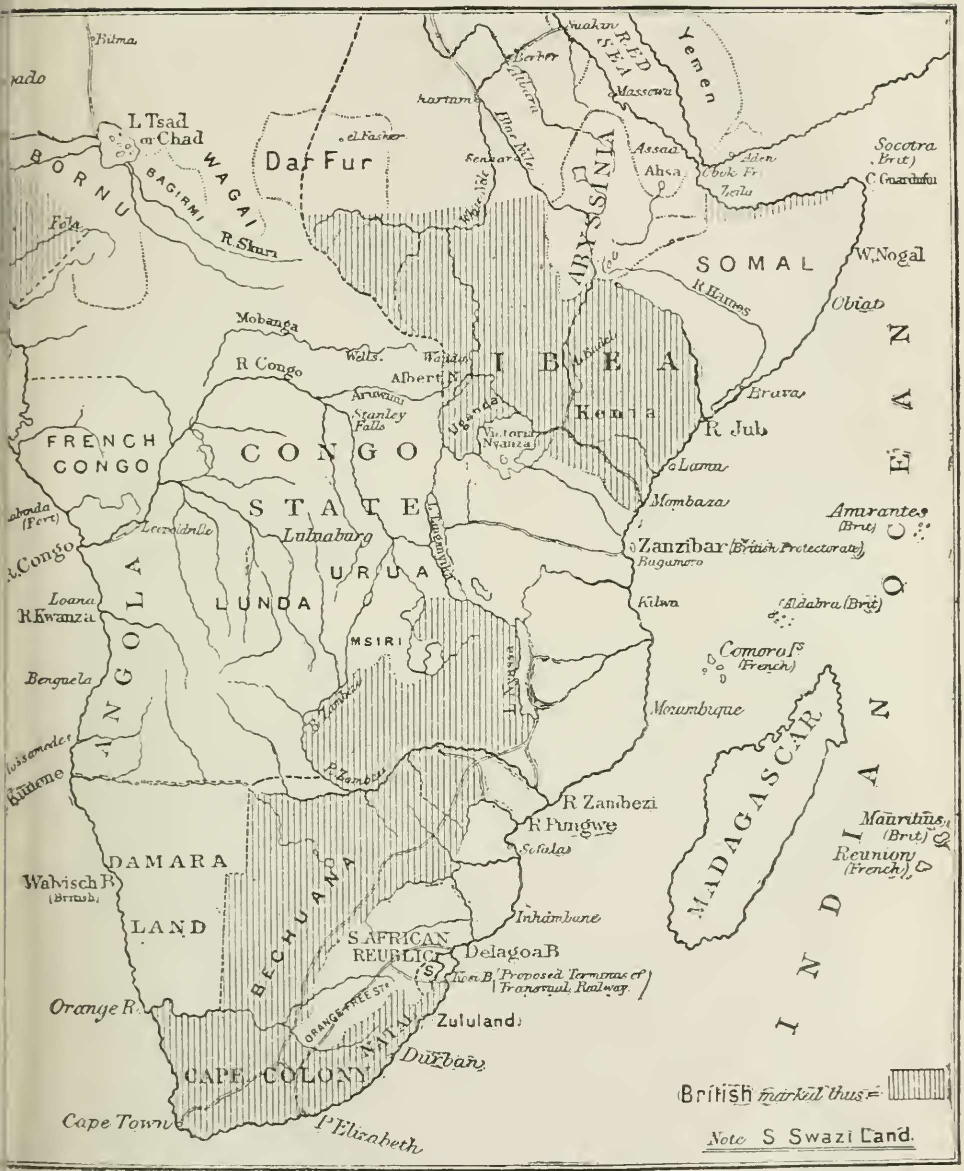
Denmark in the Treaty of Kiel, 1814. It was formerly much larger than it now is—in fact, the two islands, now nearly a mile apart, formed one up to 1720, when a storm separated them. It is on Sandy Island that the sea-bathing, perhaps the finest in the world, takes place. The main island is a red sandstone cliff about 170 feet high, with (but in one spot) inaccessible sides. The town is divided into two parts, the Unterland on the beach containing the Government Bathing Establishment (hot and cold swimming baths), Conversations House, theatre, coastguard barracks, hotels, &c.; and the Oberland, to which access is now obtained by a flight of 192 steps and by a lift worked by steam power, containing the largest number of houses, including the church, schools, lighthouse, Governor's residence, &c. From its isolated position Heligoland is wonderfully healthy, its climate being most bracing, equable, and mild—cooler in summer and warmer in winter than either England or the Continent. From 13,000 to 14,000 visitors generally come over during the bathing season, from May to October, exclusive of excursionists who flock over in large numbers from the neighbouring towns. The Heligolanders formerly existed solely by pilotage and fishing. In 1830 public gaming-tables were established, and the island became one of the most fashionable bathing-places of North Europe. The gaming-tables were abolished in 1871. The inhabitants now live mainly by fishing in the winter, and the letting of lodging-houses and the proceeds of the bathing establishment in summer. Pilotage has almost entirely ceased, the larger vessels fitted out in the Elbe and Weser enabling the pilots from these rivers to go further out to sea to seek for ships. The direct intercourse is entirely with Germany. The island is a port of registry, and had on December 31, 1888, 49 vessels, the total tonnage being 516 tons. It is a much-frequented rendezvous of the North Sea fishing fleet. The Governor is judge of the Court of Sessions, and in matrimonial and divorce cases is assisted by the chaplain. The inhabitants have a pure but unwritten language of their own, and are of Frisian origin. They belong entirely to the German Lutheran Church. Education is compulsory between the ages of six and fourteen. Three hundred and fifty-seven children attend the one Government free mixed school in the island, and are taught in both the German and English languages. There is a free public library and reading-room. The only imports subject to duty are alcoholic liquors and petroleum. Connection with the mainland is maintained by steamers leaving Cuxhaven twice a week in winter, and by twenty-one steamers a week from the neighbouring ports in the summer months. The island is also connected with Cuxhaven by telegraph. Both English and German coins are current and legal tender. There are no private banking establishments, but a Government savings bank was instituted in 1883, and has now £874 deposited.



W. Shawe F.R.G.S.

By the agreement no compulsory military service will be imposed on any living inhabitant.

MAP TO ILLUSTRATE THE ANGLO-GERMAN AGREEMENT.



lly placed at the disposal of the Manchester Geographical Society by the Society for the Propagation of the Gospel, and reprinted from the *Mission Field.*

THE ANGLO-GERMAN AGREEMENT.

Mr. Stanley, speaking at Newcastle-on-Tyne, when he was presented with the freedom of the city, referred to the Anglo-German agreement. He said he was as much electrified as any of them when he saw that what a legion of explorers had been unable to do, and any number of armies and missionaries unable to effect, their Premier had by a stroke of the pen not only secured 150,000 square miles of territory, but half a million square miles more. He now saw prospects whereby English people could breathe in the heart of Africa. The best feature of the arrangements was that neither England nor Germany were compelled to retire disgusted. He was quite sure that if he could muster the chiefs of the country who had fallen under the ægis of the British Empire by that agreement, they would say "the day was a red-letter day in their calendar, and that the day of days for them had come." One advantage gained was that Germany and England would be mutually interested in securing the freedom of the Zambesi and Shire rivers, and so the Portuguese difficulty would disappear. He looked forward to the construction of a railway from Mombasa to Lake Victoria, and the navigation of that great lake by steamers, the result of which would be advantageous to this country and the native races. In the new territories were included the glorious tableland in the heart of Africa, where English people could breathe. He had examined very keenly what the size of that country was, and he found it measured 900 miles at the greatest length, and 700 miles at the greatest breadth—a very compact piece of territory. As to the cession of Heligoland, he had never been there; but the Germans had a big hold upon Zanzibar, and all that had been handed over to the protectorate of Britain. There was a population of 380,000, a trade of two millions, and the island of Pemba, alone worth ten Heligolands.

"Nyasa" or "Nyassa."—Our readers will have noticed that lately we have adopted in our pages a spelling of the above word which to some of them will be unfamiliar. We will now give our reasons for this change. We profess to spell all African words and names *phonetically*—that is, according to strict phonetical principles, as these are understood and laid down by the promoters of the phonetic movement. These principles forbid the double "s" in any word the syllables of which end with a vowel and begin with a consonant. In such words, there is no place for "ss" phonetically. Now all African syllables *end* with a vowel, and there is not a single exception to this rule. The word under discussion is a two-syllable word, divided thus—"Nya-sa." Many people mistakenly pronounce it as if it had three syllables, thus—"Ni-ass-a." But the "y" is to be taken as a consonant, and very closely joined to the "n," so that the three letters "n," "y," "a" must be pronounced as one syllable, "nya." Again, whether the first "a" be pronounced broadly as the "a" in "father," or shortly as the "a" in hat—that is to say, whether we say "Nyā-sa" or "Nyă-sa"—the question of the propriety of "s" rather than "ss" is unaffected. If it be asked why was the word ever spelled "Nyassa," the answer is—because hitherto we have followed the spelling adopted by Livingstone and others with him, or before him, who first heard the word from natives, and then, not troubling themselves about strict phonetic principles, wrote it down according to the spelling adopted in English words in which the sound of the "a" and the "s" together was the same. Such words as "massive," "classical," "passage," do indeed have in them exactly the same sound as is found in "Nyassa," yet *phonetically* they would none of them have a right to "ss." The reasons why this spelling is abandoned having thus been given, it may be added that we of the Universities' Mission are only going back to the correct phonetic spelling of the word after the example set by the Free Kirk and Established Scotch Missions on the Lake, who for some time past have, in all their publications, both in English and the native languages, adopted the correct spelling. To persist in what is really error, after all others have long since corrected themselves, would be, of course, to stultify ourselves in the eyes of those who know best about the subject.—*Chauncy Maples, in Central Africa for December, 1890.*

ZULULAND: PAST AND PRESENT.—*(See Map.)*

By Miss H. E. COLENSO.

[Addressed to the Members in the Memorial Hall, Wednesday, October 1, 1890.]

IT is just three years and a quarter since the territory now called Zululand was finally and formally annexed to the British Empire, on the 19th May, 1887. A twelvemonth later a "rebellion" was declared to have broken out there, and by the end of a second twelvemonth—by May, 1889—the principal Zulu chiefs and headmen were in gaol, condemned by so-called English law to terms of imprisonment varying from five years to fifteen, for high treason against the Queen of England.

Zulu names, I know, are a stumbling-block to English mouths, and I will only ask you to-night to make acquaintance with the two principal victims: Dinuzulu, now aged nearly 23, King Cetshwayo's son, and heir to all Cetshwayo's troubles, and Ndabuko, now 48-9, Cetshwayo's brother—uncle, therefore, and guardian of Dinuzulu, and head of the Zulu national party.

Their sentences are the heaviest, with that of another of Dinuzulu's uncles, and, since I left them in December last, have been altered to exile on the lonely island of St. Helena. It is claimed that this is a mitigation. The proposition is of value so far as it carries an admission of dissatisfaction with the original sentences; but while physically it may be more wholesome to be tethered on an island than locked into a cell, there are aspects from which this change is a heavy aggravation of punishment. Witness the proposal, lately renewed in South Africa, to make imprisonment over seas the punishment for stock-stealing, because likely to be "more deterrent to the native mind than hanging would be."

These chiefs—with their companions, still in gaol in Zululand—are the recognised heads and leaders of the Zulu people, respected by them not only because of birth, but for brain power and governing ability. Their influence with "many thousands" was urged as a sufficient reason for their being condemned to exile, before even they had been put through the mockery of a trial. Yet it is a fact—and one on which the hostile officials especially insist—that in spite of our wanton and ruthless invasion in 1879, the Zulu people generally have always been friendly and even dutiful towards the English, these imprisoned and exiled chiefs being their guides and leaders throughout.

That heavy wrong is being done, I and my fellow-colonists are now not the only witnesses; and public men of the weight of Mr. Charles Bradlaugh and Mr. R. W. Hanbury have pledged themselves (on August 12th) to the House of Commons to prove this wrong before it at its next session, and from official records.

I wish now, in accord, I believe, with the objects of this society, to give you some idea of the present geographical extent, as well as of the nature of this evil, to enable you to judge how seriously it must affect and thwart the advance of British influence in Africa.

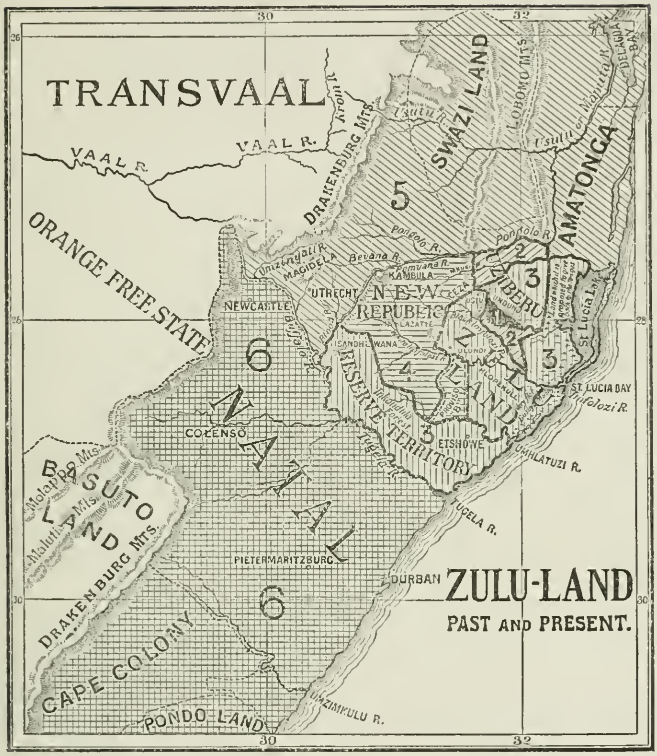
The Zulu is one of the many tribes of the same great African race of which the Amaxosa, the Basutu, the Swazi, Matabele, and Bechuana are members.

Their own belief that originally they came from the north is perhaps true, though vague, referring probably to a remote date. Some of their customs are to be found in ancient Jewish history. I have seen Zulus who, in appearance, might have been the originals of Assyrian figures on the bas-reliefs in the British Museum; and the photographed profile of a statue of one of the shepherd kings of Egypt reminded me promptly of a personal friend.

The study of language shows this race to be wide-spread. In the preface to his "Zulu Grammar" my father quotes the fact that "the same word Unkulunkulu (the Great-great One) is used under various forms as the name for the Creator all along the East Coast of Africa, from the Gallas country to Natal; on the West Coast to Damaraland, and probably even at Sierra Leone." Umlungu, one form of the same word, is that originally chosen and still used by some tribes to distinguish us white people from themselves. (Last year I heard the wretched Zulu women describe the only Englishmen whom they had met as "those wild beasts.") As far as I am aware, they have not now any common name for their own race. One set of tribes has indeed a quaint tradition of the journey south, telling how their original ancestor, finding his own strength failing, ordered his family to shut themselves into one of the huge globular baskets, like those still used for storing grain; how he fell back dead, after achieving one mighty kick which started the basket rolling, over hill and dale, river and forest, till at last it stopped and steadied; and how, when those within ventured to look out, "they found themselves in this country where we now live," say some of their descendants, who are still nicknamed "those belonging to the basket."

To come to somewhat more modern times, and to South-east Africa in particular, the Zulus can count their chiefs back through twelve generations. Mr. John Mackenzie, an authority on the Bechuana tribes, gives a table of one branch of their chiefs for seven generations, and of another (the Batlaping) for

SKETCH MAP.



NOTES.

No. 1.—Land allotted to both hostile parties, Cetshwayo's and Zibebu's, 1883.
No. 2 (lower).—Cut off from Zibebu because inhabitants hated him, 1883.
No. 2 (upper).—Placed under Zibebu in exchange for 2 (lower), 1883.
No. 3 (upper) with 1 and 2 (lower).—Placed under Zibebu, 1879-82.
No. 3 (middle).—Somkeli's portion of coast district.
No. 3 (lower).—Reserved from Cetshwayo in 1883.
No. 4 with 2 (upper).—New Republic, 1886.
No. 5.—Claimed 1861-78 by both Zulus and Boers.
No. 6.—Colony of Natal.

Note.—The shading on Cape Colony and Pondoland should be absent.

eleven, taking them back, as he computes, to about 1630, when in England the struggle between King and Parliament was just beginning.

Among uncivilised races the violent taking of human life is, doubtless, thought of relatively less importance than is the taking of European life among us now. On African life, alas! we seem to set a lower value. And the fact that the African tribes allow their chiefs in this particular the same licence which each man claims for himself, may perhaps have led to the mistaken notion that the chiefs are "irresponsible despots." The opposite is the case. But very few Europeans realise the extent to which these African chiefs are the representatives of their tribes, are controlled by the will of their people, and how liable are the chiefs themselves to sudden death when they fail to interpret and express that will, if they cannot lead and guide it.

The Cape Government Commission, which inquired in 1881-2 into native laws and customs, had the unique advantage of being able to consult the Zulu king (Cetshwayo) himself, then a prisoner at Capetown. His evidence, printed with the report of the commission, shows that at the height of his power the Zulu monarch could not make laws without the consent of his great Council, and had to obey the laws when made.

The land belonged always to the tribe, and was inalienable by the chief, who held it as trustee, with a share in the use proportionate to his position; and held in trust in like manner all cattle obtained in war.

"The chief's work" of any kind, whether civil or military, was and is still performed by levies of young men, called "amabuto," a word commonly translated "soldiers," but properly meaning collections of people of the same age, whether of soldiers or workmen, of girls or of boys. The whole tribe is thus classified. This system has been called the Zulu military system. The great Zulu chief Tshaka added to it a regulation forbidding marriage to the younger regiments of boys and girls alike, until the former were, by general consent, allowed to have won their spurs. But the system itself, says the Government Commission of 1881-2 on Natal native affairs, "is of very ancient, immemorial date. It exists among the neighbouring peoples as well, among Swazis, Tongas, and Pondos, and is strictly kept up to this day by chiefs in Natal," *i.e.*, through now 47 years of British rule. Under it the young men are called out by the chiefs in "regiments," for planting, weeding, building or shifting the huts, forming their towns or villages, or for police purposes, as well as for war.

The earlier Zulu chiefs appear to have led quiet lives, or, at any rate, to have died at home, for on any great national occasion the Zulus are wont to pay a solemn visit to the graves of the first nine of them, sleeping each on his own hillside, on the site of the home in which he lived, and all in the valley of the white Imfolozi river, which may thus be called the cradle of the Zulu power. For the tenth chief was the famous Tshaka, under whom that power culminated in the beginning of the present century.

Tshaka's dominion extended, before his death, from the Pondo border, south of Natal, right along the watershed of the Kahlamba or Drakensberg Mountains; and his conquering expeditions and tributaries reached "the St. John's river to the south and the King George's river to the north, at Delagoa Bay, and far inland beyond the mountains."* The Zulu nation has sometimes been described as a mushroom growth, springing suddenly from insignificance through Tshaka's ability. A very slight acquaintance with the facts shows that long before his time the Zulus had grown into a nation, composed of various tribes, all claiming and tracing their descent from one or other of the nine old Zulu kings, and acknowledging so close a relationship that the chiefs of some of them are still forbidden to intermarry.

Tshaka's individuality, however, undoubtedly counted for much in the development of the Zulu power. Two stronger neighbours quarrelling, he protected the beaten people whose chief had formerly befriended him, and thus drew on himself the wrath of the conquerors, the formidable Ndwandwe people, one branch of which is still dominant throughout Gazaland, reaching to the Zambesi. After three years' desperate struggle Tshaka worsted this tribe, and drove its chief to the north, while the bulk of the people remained and became Zulu subjects.

Various tribes had joined in this struggle on either side. All who joined him, and all whom he overcame, Tshaka at once incorporated in his own regiments according to age. Henceforth his career and theirs was one of triumph, and though, no doubt, among the half-conquered tribes on the fringes of his empire his name was as much a terror as in some parts the English name is now, those nearer home prospered exceedingly, and many of them came to share the Zulu pride in him and in "the grand old Zulu people," as I have heard it called by their half-civilised descendants.

Such was the Zulu power when contact with the white man —the Umlungu—began to dissipate the idea of his celestial character. First came a handful of English adventurers, in 1824, whom the Zulus gave honourable welcome, allowing them to settle on the spot where now stands the town of Durban, in Natal. Next, in 1837-8, came the long wagon trains of the Dutch Boers, perseveringly crawling over the mountains in search of independence, having left the Cape to avoid English rule. Mutual distrust and terrible slaughter ensued between them and the Zulus, now distracted by internal strife between Tshaka's two half-brothers, Dingana (who had assassinated him in 1828) and Mpande (who avenged him in 1840, and whose young son, Cetshwayo, had already been named by Tshaka his successor). The Boers meanwhile had settled on a large part of the district of Natal, claiming it as payment for having sided with Mpande.

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* Sir Theoph. Shepstone, in appendix to Report of Cape Government Commission, mentioned above.

In 1843 the English Government took Natal by force from the Boers, who moved north-west to found the Transvaal Republic, and the Zulus accepted the situation because—I quote from the official report of their words spoken in 1877—" on the arrival of the English people in the country, they (the Zulus) were satisfied that just people had come near them and there would be no trouble, and that therefore no claim had been made upon the English people to restore land which was the property of the Zulus."

Thirty-five years followed of absolute peace and security between Natal and Zululand, the Governor of Natal, at the end of 1877, testifying to " the peaceful and friendly relations that have existed for so many years between the English and the Zulus." The only barrier between them had been, in the words of Sir Bartle Frere, " a river easily fordable for the greater part of the year, and not too wide to talk across at any time." This boundary, along the Buffalo and Tugela rivers to the sea, had been fixed in 1843, with Zulu consent, after Natal had been proclaimed a British colony. Very different was the position between the Zulus and the Transvaal Boers, who, not content with the enormous regions which they had appropriated beyond the Drakensberg, gradually spread out into the rich country sloping east from these mountains, right and left, cutting off the north and west of Zululand, appropriating here and there a " farm " which pleased them, from which they drove the Zulu occupants, occasionally shooting one. By 1861 these encroachments, now known as the Transvaal districts of Utrecht and Wakkerstroom, reached far into North-western Zululand; and in 1875 the Boer Government proclaimed this district part of the Transvaal, and made a futile attempt to levy taxes on the Zulus living in it.

The actual leader and guide of the Zulus since 1856 was Cetshwayo, though his father, Mpande, retained the title and dignity of king till his death at an advanced age in 1872, at which time Cetshwayo is described by Sir Theophilus Shepstone as " a man of considerable ability and much force of character, remarkably frank and straightforward," and in later, sadder days by his own brother, Ndabuko, as " a merciful prince, who shrank from shedding blood."

In 1861, and through the fifteen following years, the Zulu chiefs sent no less than eighteen separate messages asking advice of the English Government in dealing with the Boer aggressions. In 1876 the official report is that "messages from the Zulu king" on this subject "are becoming more frequent and more urgent." In that year the Governor of Natal wrote: "This Government has always impressed upon Cetshwayo the importance of preserving the peace on his part, and of settling all questions of dispute by calm representation; and this advice Cetshwayo has always received in the spirit in which it has been given, and assured us of his desire to act according to it. I have no reason to doubt that he has been and is really desirous of so acting."

Yet for nearly two years longer, the Zulus—from 30,000 to 40,000 fighting men—were left to pray in vain for our "friendly intervention," to prevent a war with the Boers, which, they said, "we wish to avoid."

Then at last, in December, 1877, English arbitration was offered. It was gladly accepted by the Zulus as a proof "that the English still wish for Cetshwayo to drink water and live;" and three English officials carefully examined the question of the western border, and decided that east of the Buffalo "there had been no cession of land at all by the Zulu kings, past or present, or by the nation," and that the land in dispute there "belonged of strict right to the Zulus."

Alas! in the previous April other English officials had annexed the Transvaal by fraud; and English minds, "for the sake of the shadow—confederation," as Mr. Froude has said, had compassed Cetshwayo's destruction and the Zulu war, which so many homes, English as well as Zulu, have such sorrowful cause to remember. And the Zulu delegates sent joyfully to hear the land award in their favour, received with it an ultimatum declaring war from England—a bolt out of the blue.

Even then the Zulus, at Cetshwayo's bidding, returned good for our evil; and, in Mr. Gladstone's words, "instead of meeting invasion with invasion, were content to wait within their own territory for the renewal of our wanton, unprovoked, mischievous, terrible attack."

At the close of the war (Sept.-Oct., 1879) Cetshwayo was a prisoner at Capetown, and the Zulu people were left stunned and bewildered without their head, rather than destroyed, great as had been the slaughter among the flower of their manhood.

The Zulu voice in the matter being thus extinguished, no more was heard of *that* boundary question. The whole of the disputed land, north and west, we added coolly to the now British Transvaal, without at all pacifying the justly angry Boers, to whom we finally returned the Transvaal, and gave them with it, quite gratuitously, this Zulu border also. In the remainder, we neither gave the Zulus our form of government nor let them have their own; but we divided the country into thirteen portions regardless of tribal limits, and regardless of Zulu feeling we forced upon the people thirteen chiefs or kinglets, called independent, but most of them mere puppets, with no claim to their new position, and no hope of maintaining it, save by the favour and countenance of English official intriguers with private ends to gain. This arrangement is known in Natal as the "Kilkenny Cats Settlement."

Had Ndabuko now been ambitious and self-seeking the Zulu story had been different, for by his white enemies' admission he was "supported by thousands throughout the length and breadth of the country." He used his influence to restrain those thousands from bloodshed, avowedly lest they should displease the English and prejudice their appeal for Cetshwayo. And he did this at a time when he himself and many others were being punished for making that appeal, by one of the thirteen puppets, with confiscation of thousands of their cattle and expulsion from their homes by fire and sword, a state of things entailing infinite misery, especially on the common people driven to hide in the forests and swamps, where, as the very Blue Books show, hunger and fever played havoc with them. But no hardships and no persecutions could stop—though they did much to hinder—the persistent entreaty of the bulk of the Zulu people for Cetshwayo's return.

At last, after three years, Zulu belief in England seemed about to be justified: Cetshwayo was released and sent home at the beginning of 1883. But the fatal mistake was committed of leaving in power those officials who had been the very agents guilty of the mischief throughout. A change of policy would have stultified them, and to prevent this they dared to alter the conditions made for the Zulus' good with Cetshwayo in England; and having received permission from the Secretary of State to reserve from Cetshwayo's rule "a small piece of land," as a location under British protection for any Zulus who might now object to be under him, *they cut off a full half*—three-eighths to the south, the whole rich country to the Umhlatuze river, thickly peopled by Cetshwayo's ardent adherents, whom they proceeded to dragoon into submission with English troops, and one-eighth they cut off to the north-east. Here, too, the bulk of the inhabitants were Cetshwayo's adherents. Here were the homes from which his own family and his brother Ndabuko, and the tribes immediately connected with them, had let themselves be driven by the puppet kinglet, Zibebu. Two sections of Zibebu's own tribe were among these victims, their tribal lands and his own being in this district, and interspersed with those of Cetshwayo's other adherents in a "useless network" if separated, to quote from a recent official report.

This Zibebu had been recommended for promotion, Sir Garnet (now Lord) Wolseley tells us, as being of "a time-serving disposition." He had accordingly been appointed one of the thirteen Kilkenny cats, and was now, in significant approval of his conduct as such, forced again as "independent chief" on this unlucky district, to the consternation of the inhabitants, and at the very moment when they were hoping to be relieved of him. Between him and some of them official documents had admitted the existence of an animosity too lively to be quite ignored, and on this ground his southern boundary was theoretically curtailed. With curious inconsistency his north-west border was extended by an equal tract, to whose inhabitants the fiat was as repugnant as unexpected. Finally, the Government surveyor sent to mark off the southern boundary varied it again, after it had been proclaimed—to satisfy Zibebu, he explains, when questioned two months later, and the reply was accepted without comment by his superior.

With such preparations trouble was inevitable. In a twelvemonth the country was in wild disorder, given up to war and famine; Zibebu rampant, aided by a knot of white mercenaries, and declared even officially to be acting "unjustifiably" and "in face of the admonitions of the Government;" while the Colonial Office repeated impotently its wish that the Zulus should be allowed to "settle their own affairs," and Cetshwayo, forbidden to "interfere," or to raise any force save "a few policemen to keep order," died of a broken heart.

He died on February 8, 1884, and with him died the promises to England, his loyalty to which had thus brought a second ruin on himself and on his people. Ndabuko now gathered up the people and drove Zibebu to take refuge with his white friends in the Reserve, after which the Zulus had peace among themselves, to be broken only by English officials in 1888.

Meanwhile, however, another trouble had beset the Zulus, with which, unaided, they were not fit to cope. A band of European adventurers, chiefly Dutch Boers from the Free State and Transvaal, but some British subjects from Natal, swarmed into Zululand, and the old story was repeated. Under cover of assisting to restore order, they raised a claim to half the land yet left to the Zulus. We had made the Zulus helpless, yet for two years and a quarter we turned a deaf ear to their prayers for help; although, in 1886, one Secretary of State declared that "the right of intervening has been fully and continuously maintained." Another Secretary of State is reported to have described the transactions with the Zulus on which the Boers based their claim as "undoubtedly of a most fraudulent character." Yet on the 22nd October, 1886, to the amazement of all concerned, England was made a party to that fraudulent transaction, and gave the adventurers the best remaining half of the Zulus and their land, on the ground that—not the Zulus, but that "*we* had allowed the case to go entirely by default" through those two years' delay.

Deputations from the principal Zulu tribes protested in every peaceful way possible against the "Zulu betrayal," as we Natal colonists call it; and in February, 1887, a British protectorate was declared over the Zulu remainder, developed five months later into full annexation to the British Empire. This was an act which soothed uneasy English consciences, while it created a new danger and pitfall for the Zulus, by converting them summarily and perforce into British subjects, and thus enabling the officials, anxious to justify by success their own fraudulent proceedings, to put the Zulus in the wrong, to denounce as treason, under the new order of things, against Her Majesty's Government the valid and dutiful and inevitable protests against dismemberment, made by the chiefs on behalf of their people handed over to the Boers.

To the rule of the Queen who had given them back Cetshwayo the Zulus made no objection. The Blue Book of February, 1887, contains the official report of the acknowledgment by Cetshwayo's brother and son of the announcement of British protectorate over them. "Ndabuko and Dinuzulu," said this message, "know that the Zulu chiefs and people and Zululand belong to the English from the time of Tshaka;" but it goes on to give notice that "they think it is their duty, by personal representation to superior authority, to make an effort to obtain restoration of the land awarded to the Boers." The opposition here was not to the Queen's authority over them, but to her casting half of them away.

This Zulu objection to being cut in two was not the only means at hand for putting them in the wrong. They had hitherto been governed by their chiefs under their own laws, unwritten but well known among them, the growth of many generations. Among official suggestions made a few months only before the annexation, we find the following from Mr. Osborn, who has been in Zululand from 1880, almost from the close of the Zulu war—at first as the only English official with the Zulus, now as the chief official in British Zululand, with the titles of resident commissioner and chief magistrate, with power of life and death, and no appeal therefrom:—

"I would point out," he says, in November, 1886, "that native law as administered in Natal is not, in many respects, the same as that prevailing in Zululand . . . It appears to me very doubtful whether it [the Natal law] . . . could be suddenly extended over the people in Zululand without considerable dissatisfaction to them, and without incurring the serious risks attaching to such conditions."

Yet, a few months later, with British rule, that very Natal native law *was* "suddenly extended" over the Zulus, with eight Blue Book pages of exceptions and additions into the bargain!

The official announcement of the annexation itself was made to a fraction only of the Zulus on the English side of the new boundary line. Bear in mind that the Zulus have no Press, cannot read nor write in any tongue, and that the jargon in which most Europeans address them—including many certified Government interpreters—they call "the white man's tongue." The new laws have never been promulgated to this day, and all this complicated machinery, with its endless possibilities for putting the Zulus in the wrong—with pass laws which forbade crossing the new boundary line, to visit a relative, or to court a sweetheart, without paying 1s. and publicly stating one's errand—with retrospective jurisdiction which enabled an official favourite to bring forward cattle claims dating from 1882, from the state of wild confusion preceding Cetshwayo's return, and to recover them with interest—all this machinery was entrusted to seven Europeans, whose best excuse is that they were ill-trained and uneducated, among whom the pass-laws were enforced by flogging without trial; the same means were used to endeavour to extort evidence in criminal cases; tribal jealousies were fomented instead of being soothed; and arbitrary cattle fines were levied by raiding parties threatening kraals, frightening the women, and knocking down the men as though the police had been a hostile force.

The Zulus on the British side of the line are now officially reported to number 137,000. Six of the seven exasperating officials were alone amidst them, save for the police, a few half-drilled natives—100 in all, with two or three white leaders; and it is nothing less than overwhelming proof of Zulu loyalty to England that through a whole twelvemonth of their experiments not one of these tyrants was even molested—that "all is quiet" are the words closing the report of a successful official raid in which 300 head of cattle had been swept off the country-side in general, by way of levying half the number from two individuals. The story of this raid was told in the witness-box by an officer of the English army who had been present unofficially.

One last outrageous experiment remained to be made. The Zulus had sent messengers, trudging for the most part on foot for over 200 miles, to complain to the distant governor of this cattle-raid, and of other violent and lawless official acts, not omitting their perennial protest against the fraudulent land agreement between the English and the Boers—for "I have never understood," the chief Ndabuko had said on a former occasion, "that I am forbidden to bring to the notice of Government acts oppressive against the people of the Government."

Alas! the very Governor to whom they appealed was himself responsible for the whole arrangement! He referred the Zulus and their grievances to the chief magistrate, the very official impeached, while he condemned their message to himself as "very foolish and disloyal," and emphasised the position by adding arbitrary cattle fines (100 head), without trial, to those already inflicted, and he became a party to an act which he had soon to admit was a blunder, and which in any case was a crime. Sir Arthur Havelock, with the advice of the local officials and the permission of the Secretary of State, authorised the return of Zibebu to Northern Zululand, for the reasons expressed, that "the Zulus appear to be far from satisfied with the recent settlement of their country, and will, in all probability, cause some trouble yet;" that Zibebu and his followers would form "a real effective coercive force" in the hands of the Government; but also—with quaint inconsistency—that this loyal and dutiful chief was otherwise likely to "go without leave, unless forcibly prevented," *i.e.*, that he was capable of shaking off "the restraining hand of the Government," the only thing, it was asserted, preventing his inflicting "frightful retaliation" for his former defeat on Dinuzulu's people. It is significant of Zibebu's real want of influence among the Zulus that he did not attempt this vengeance until secure of official support.

For the three and a half years elapsed since their defeat, Zibebu and his colleague Sokwetshata, with their followers, had lived on locations allotted to them under the wing of the then resident-commissioner, now chief-magistrate at Etshowe, in which they had not been molested. That Zibebu had represented the disturbing element was proved by the fact that after his expulsion the Northern Zulus had, at any rate, peace among themselves, immediate and unbroken, till the trouble which I have yet to relate. The expulsion was in 1884. Within six months it was admitted that the northern district was fast becoming thickly populated again by Dinuzulu's people; all the inhabitants who chose to remain, no matter which side they had fought for, having been encouraged by him and Ndabuko to settle down in peace.

In 1887 Dinuzulu and his people were annexed and officially declared subjects of the Queen, and in December of that very year Zibebu was sent up to have his revenge upon them.

The Governor called it "repatriation," and publicly, in person, told the Zulus that he returned the two chiefs to their own old tribal lands only, to interfere with no one. Those very tribal lands—a mere "network" in any case—that Governor had himself given just a year before to Dinuzulu's people. They were long since built over and planted by others; and the whole district was crowded with those who had left Boer rule and settled where they were, with the Governor's express permission, to be under the Queen with Dinuzulu.

The chief-magistrate simplified the question of the network of tribal lands by varying the Governor's order, and sending Zibebu to take possession of the whole district from which he had been driven in 1884. Zibebu himself and the local resident magistrate took this to include even the district where, in 1882, reconciliation with Zibebu had been officially held to be impossible; and the inhabitants were not even given notice to quit.

The two returning chiefs and their men (Zibebu's 700, soon afterwards joined by 400 more), leaving their women and their stores of grain behind, were sent off together as an armed force, carrying guns and assegais, and no food—a fortnight after the first announcement that they were coming. After one day's journey, Sokwetshata's party reached their destination, and were at once used in a warlike attack, led by their magistrate, on the villages of two chiefs who had neglected to pay their respects to him, and who were now arrested and sentenced to some months' hard labour. As they had helped to drive out Sokwetshata in 1884 this looked like permitted revenge.

Zibebu's party had gone on with the white men sent to accompany them. He reported, after another day's march, that they had arrived (he dates from the "tribal land" of quite another tribe); that Zibebu had "not been met by a single friend," and was "now in the midst of thousands of enemies with about 700 men (soon raised to 1,100) and no food."

The thousands of enemies—especially their leaders—were supposed to be already "rebellious." Zibebu's "repatriation" had been urged on this very ground, to form a "real effective coercive force" against them. Yet the thousands made no resistance when 800 of their number were summarily turned out of house and home to accommodate Zibebu's men, who insolently trampled down their growing crops and took possession of their stores of grain; while delay on any of the victims' part was punished as "contempt of the magistrate's order," with flogging, with wholesale seizure of cattle, and imprisonment with hard labour. One such—the chief of an evicted tribe—I used to see daily in a gang with similar unfortunates, guarded by armed men, and working out his sentence by carting manure and hoeing crops in the private grounds of the magistrate who had condemned him.

Eight hundred people the officials admit that they "removed," and add that others removed "voluntarily" at Zibebu's approach; and that "people who would not acknowledge Zibebu as their chief were ordered to move out of the district"—their own district and their own tribal lands!

We can account for 3,800, and we can show that of these some 1,200 were driven across the border to Dutch rule; that some

1,100 sought shelter among the rocks and woods of their own district; and that some 1,500 more crowded in among friends in the corner left to Dinuzulu. Yet there was no collision, and for six months but one isolated act of violence; and the only possible explanation lies in the strong influence over their people, and absolute loyalty to England, of the chiefs for whom Her Majesty's Government has found no better use, and no higher reward than a twelvemonth's shameful imprisonment, and now—exile to St. Helena. The single act of violence occurred three months after Zibebu's arrival, when two of his men were killed by three of Dinuzulu's evicted people, one of whom has been hanged, while the other two are in gaol for life in consequence.

With this one exception no one for six long months could be seduced into treading on the tail of Zibebu's coat, in spite of his patrolling the country, till the very official reports themselves caused the distant Governor to remark that what was represented to be "the assembling by Ndabuko of armed forces with the intention of disturbing the peace" might be accounted for by "the sudden appearance of Zibebu's force of over 1,000 men within five miles of Ndabuko's kraal," and that it would be "difficult to persuade Dinuzulu and his friends that the Government is impartial with respect to them and to Zibebu and his followers," to "disarm Dinuzulu's suspicion that the Government is combining with Zibebu for his destruction."

Instead of retaliating, the chiefs sent in the fourth month to complain to the Governor that "the magistrate did not abide by the Governor's orders" as to Zibebu's tribal lands; that all Dinuzulu's people are in distress owing to Zibebu's lawless acts; Dinuzulu cannot think it possible that the Governor is aware of them."

It is not easy to see what right the Governor had to expect anything but mischief from his own arrangements; but his reply to this message promised the chiefs redress, acknowledging that they had been wronged, and in contravention of his orders. And this reply was entrusted to me as well as to the Zulu messengers. But the redress was left in the hands of the mischief-makers.

At last Zibebu patrolled once too often. He set out with some three hundred men in one direction, and turned up in quite another at daybreak, at the little group of five or six huts to which Umsutshwana, one of the few left alive of Cetshwayo's old councillors, had meekly retired on being evicted with a large part of his tribe from their own lands. He had taken a leading part in driving out Zibebu in 1884. An old grandmother shall tell the story, as she told it in court, sitting flat on the floor with a baby grandchild beside her.

"I know Umsutshwana," she began. "At the time of his death I was at Ntshuku's kraal. I was there because we had run thither for protection, when we were running away from Zibebu. Umsutshwana belonged to the Government—that was the reason why we went to him. I slept outside the kraal fence. It is quite a small kraal. On the night before Umsutshwana's death my elder daughter and her three daughters were with me there. My younger daughter was there also with her three children, of whom this is one. Her elder child was not five years old. Early next morning an *impi* (war party) came and surrounded the kraal. It killed my eldest daughter and the child of five. It was stabbed in the thigh, and then it crawled, when it's mother fell, from off her back to the embers by which we had been. It came and sat beside us, and a young man came up and stabbed it to death. I heard the *impi* cry *watshetsha* (Zibebu's distinguishing cry). Beside my daughter another woman fell. As to Umsutshwana he was shot; the men who shot him were Zibebu's. When he was shot I heard him cry out, 'Oh! alas! I am dying, and I don't know for what sin.' I heard the men who were killing him cry 'Ji' (a sign of triumph at the death of anything hunted). Then Zibebu rode up fast on horseback, at the time 'Ji' was cried, and jumped over Umsutshwana and back again, being then on foot. Then the *impi* went off, driving the cattle with them. They took away also women and children. They said that I could remain. What was the good of taking one so old as I was?"

The old woman's story is fully confirmed, and Zibebu does not deny the fact. His *impi* swept on, seizing cattle, and killing ten men at other kraals in the course of this "patrol."

The chiefs had just received my assurance that I believed the Governor had spoken in good faith in sending them that friendly message, and this cannot but have strengthened their belief that their persecution was unauthorised. They determined to stop Zibebu's patrols on old men, women, and children. Gathering quickly some 4,000 men they routed him at a single blow, proving their loyal intention in the very act by respecting and avoiding the magistracy, not 1,000 yards from Zibebu's camp, with one of the flogging magistrates inside it, and sixty firearms in full play in support of Zibebu against them.

Although, too, that magistrate had, just three weeks before, led a party to attack themselves in the only refuge now left them in British Zululand, among the rocks and woods and sleet of the Ceza Mountain, and had killed some thirty of their followers without any excuse at all. The advance of this force had been observed from the mountain, and first sending out two peace messengers, who met it and were stabbed by the Government native contingent, the chiefs fled, driving the bulk of their followers before them up the narrow passes, and some miles over the Dutch border.

The magistrate's party had come nominally to serve six warrants of arrest—four on evicted headmen, for having objected verbally and delayed before turning out for Zibebu, and for other "contempt of the magistrate"; the two remaining on Dinuzulu and Ndabuko themselves, for cattle stealing—a ridiculous charge, since dropped, the meaning of which was that some of the starving people had begun at last to get out of hand and to seize cattle (often not without claim to them) from their neighbours; and Ndabuko had been sternly warned, soon after the annexation, not to interfere, but to leave such cases to the magistrate.

Finding their victims flown, the guardians of the law, the advance-guard of seventeen mounted police with a white leader, enforced its authority by firing right and left into what stragglers they could find, killing thirty out of 150 who were hiding—trying to escape—crying, "What have we done?" The official in charge stated, ten months after, in the witness-box, that he had not yet made up his mind whether on that occasion he had been acting in a civil or military capacity. And the stragglers, desperate, turned and fought in self-defence, till the news reached those above, who streamed down as they heard it, and joined in driving off the assailants, killing two, but only till Dinuzulu could get down and call his people off, out of respect for the Government which these assailants misrepresented. This is not only our Zulu version. It is the only version which fits all the facts as they were brought out at the trials, and it is the version to be gathered from the evidence of hostile witnesses, one of whom also put into our chiefs' mouth the words, "We are not fighting against the Queen."

The experiment of Zibebu's return had failed to make the Zulus rebels, but it had succeeded in creating a disturbance which might be visited on them. English troops were sent to "restore peace and order." They found that the chiefs, with the bulk of their men, had fled from British Zululand without striking another blow, and they "pacified" the hapless people left behind by means of a mixed column of troops and auxiliaries, of which Zibebu and his men formed a part, in a manner so shocking that to this day civil and military authorities throw each the disgrace of it upon the other. By burning of huts and corn, by the shooting down of unresisting men, and the wholesale violation of women. Three hundred wives and daughters of Dinuzulu's people were taken prisoners by British officials and handed over to Zibebu, who distributed them amongst his followers. Seven months after I paid ten shillings through a magistrate's office to recover one such, with her unborn child, for her own husband, after which a general order was made for their release.

Before they fled the chiefs had appealed again to the governor, receiving now the reply that he could not consider the grave charges which they brought against the officials while they remained in arms. They had taken refuge among the thousands of their own people in Dutch territory, and they came back voluntarily, by my advice and Mr. Escombe's,* to impeach the persecuting officials for their people's sake, and to challenge them to the full inquiry which more than one utterance of the governor himself had given us the right to expect. The result was the shocking mockery of justice and of English law against which I am now appealing to the public conscience of England.

The so-called trials themselves lasted nearly five months, from November, 1888, to April, 1889. I was present throughout, as I had promised the Zulus. But in the first case (undefended) the Crown Prosecutor warned me that it was a mere figure of speech to call myself "the prisoner's friend." At any rate that prisoner had no other there, for his best friend, Mr. Escombe's representative, had withdrawn from the defence, as the strongest —the only sufficient—protest open to him against the court's indecent refusal to allow us time even to collect our witnesses.

The prisoner, a chief named Somhlolo, was condemned to five years' imprisonment with hard labour, for high treason, on a mass of unsifted hearsay statements. The sentence on him found him guilty because, in so many words, he had joined the other chiefs whose cases had not yet been tried.

This sentence, delivered in November, 1888, on the first case tried, vitiates the whole subsequent proceedings of the court, which could only defend its own judgment by finding the other prisoners guilty of the same offence.

Much remains to tell of these trials, of which, with all their curiosities of injustice, we have full records.

Much also of disturbances in other parts of Zululand, each referable to a set of circumstances totally inconsistent with treason, and perfectly consistent with another cause—the fear of Zibebu backed by the officials—and each contributing to the band of victims, some of them grey-headed old men, now in Etshowe gaol. Then there is the present condition of Zululand, where it is conclusively apparent that the local officials can do no wrong, and that no one who takes exception to their doings can be right. They are therefore having things their own way, and are preparing fresh mischief by rewarding native parasites for services during the disturbances by giving them the cattle of the victimised Usutu†—by forcing in among the Zulus just those Natal natives who have been recently used against them, *e.g.*, as native levies, in the revenge I have mentioned—forcing these men in as chiefs and officials, conquerors, instead of taking care that the incomers should be chosen from among the many free from such drawbacks, and that they should appear as friends asking the consent of the tribe whose land they are to occupy.

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* A leading Natal lawyer and politician.

† Usutu was Cetshwayo's distinguishing cry; now his son, Dinuzulu's.

They boast of the money in their treasury, but omit to say how much of it is hut-tax paid for last year by starving Usutu for the sites of their huts burnt by the Government forces, and for their crops burnt and trampled where not carried off by these licensed robbers; or how much of this money has been procured by forced labour, by forcing out the Usutu in gangs to work on Government railways outside of Zululand, as was the case whilst I was there. The boast at any rate disposes of the pitiful excuse which has met me more than once, that we cannot afford to pay better men to govern the Zulus. But it is entirely beside the mark as an answer to our impeachment, because, if our story is true, any appearance of prosperity and contentment must in the nature of things be deceptive. It is not in human nature to be or to become content with conditions permitting such atrocities, and the charges that we bring do not rest on my assertions, they are already proved out of the mouths of the officials themselves, and from records officially prepared.

The Zulus' hope has been that their story may yet reach the ears of those who once, in 1883, by giving them back Cetshwayo, gave them ground for believing that England recognised their loyalty and regretted the wrong done them in her name. But under present circumstances even that hope must soon vanish, and the longer the Zulus are left to brood over their wrongs the deeper and more bitter will grow their sense of unmerited suffering and disgrace. And the feeling will not be confined to the little corner of the map which we now call Zululand, nor even to those wide portions of the Transvaal and Natal still peopled by thousands of Zulus. In the words of the then British Commissioner for South-east Africa, writing of the Zulu question in 1882, " We must not leave out of account the native populations and races of South Africa outside the Zulu country. They are not indifferent to what is passing. They will be affected some of them directly, others but remotely, by our action in this matter, whatever that action may be. They will pass their judgment on it, and their judgment, and the effect that our action will have upon them, we cannot afford to disregard. Whatever we do in this matter it will be discussed through the length and breadth of the country, in every native kraal from the Kei river to the Zambesi." (C. 3,466, p. 147.)

Two examples I can give from my own experience; for in 1881-2 messages came to my father from the Amampondo, to the south of Natal, to ask his help in representing their difficulties with the Cape Government. This was simply because he was known to have spoken for the Zulus, to have appreciated their position, and at a time when there seemed little chance of his obtaining for them attention, much less redress. Again, in 1882, an embassy reached Natal from Umzila, chief of Gazaland, a territory with six hundred miles of coast line, and running along the Zambesi for some two hundred miles. The party had taken many months on the road, and carried several heavy ivory tusks. Two of these were brought to my father to thank him for speaking for the Zulus in their trouble, and to ask him to be Umzila's friend too. He was not in trouble at present, he said, but he knew that his time for trouble with the white people would come some day, and he hoped that Sobantu (my father) would speak for him then. My father sent him the value of the tusks in shawls, and some two years later another tusk was brought to my mother and to me, to ask us to continue to Umzila's son the friendship which my father had promised to his.

Elephants' tusks as pledges of friendship were also accepted from these people by the English Government in Natal. Yet the Anglo-Portuguese Convention, just published, forbids our interfering between them and Portugal, and the Zulu story for them will only confirm their own experience, "Put not your trust in the English."

And what, then, do we claim for the Zulus now? To hang the wretched Zibebu as a murderer would hardly improve matters. But it is at least equally monstrous that he should be in receipt of a good-conduct pension, and that the accessaries to his crimes should still hold Her Majesty's commission.

The imprisonment of some, and especially the banishment to St. Helena of the three leading chiefs, are the outward and visible sign to the people of their own general disgrace. But merely to release these victims under the present *regime* would be of no avail, especially in the face of the official threat already uttered, that in this event their "prompt and severe punishment" would be bound sooner or later to follow. Though not acquainted with the fable of the wolf and the lamb, the chiefs once expressed the same idea in saying to me during the trials, "If we are ever acquitted you must stay in Zululand to keep an eye on us, or Mr. Osborn (the chief magistrate) will have us back in gaol here in a week or two"—the idea that my presence or advice might in any way avert the muddying of the water, however ludicrous, hardly indicating an intention to offend.

Wholesale removal of the present officials is not urged. The late Governor has been removed—promoted to Ceylon. The special court is dissolved, and its members hold no appointments in Zululand. The removal is claimed of certain men only, on two grounds:—

1. That a change of policy is necessary for the safe government of the Zulus, and to restore confidence in England's intentions among surrounding native races; and that no change of

policy is possible without the removal of those responsible for the old policy, and most prominently identified with it.

2. That the removal is claimed of such officials only as shall be proved before any disinterested tribunal to have been personally guilty of deliberate maladministration, of acts of bad faith and cruelty, and unlawful violence, unfitting them to hold responsible positions in any of Her Majesty's dominions.

The Secretary of the Aborigines' Protection Society, in a letter to the Secretary of State, dated March 28th, 1890, and appearing in the last Blue Book, urges that such inquiry "is scarcely less necessary in order to afford to the present administrators an opportunity of clearing themselves from the discredit now attaching to them than as a means towards advancing the prosperity of Zululand."

In the reply it is suggested that the impeached officials would court such inquiry, but are content to waive their right, lest if held in Zululand it should disturb the native mind!

The anxiety is superfluous, as ample materials for opening an inquiry exist at present in England, in the Imperial Blue Books and the Notes of Evidence (over 1,000 printed pages), taken during the late trials by the president of the special court, who has himself brought his papers to England.

I claim the help of all of you to obtain redress for chiefs and people for the sake of all concerned; and I have spoken to little purpose if you do not feel that we are all of us concerned. This is a scientific society, but it is also an English society, and our rights as English subjects carry each of them a duty; while neither of our great political parties can cast the first stone in this Zulu matter, in which both have been guilty as our agents. I ask your help as English men and women for our fellow-subjects in Zululand.

Longmans' School Geography for North America. — By George G. Chisholm, M.A., B.Sc., and C. H. Leete, B.A. New York, 1890.—Mr. Chisholm says, in his preface to the English edition of his book, that "while he has sought to exclude from the text-book almost all details which the pupils cannot be expected to keep permanently in mind, and can hardly attempt to keep in mind without doing injury in some way to their mental training, he has kept constantly before him the necessity for taking care that what the text-book does contain should be really foundational—should consist of what is most effective as discipline, most important to know." This excellent plan commended itself to Mr. Leete, who wrote for the present edition the portions on America in general, North America, and the United States. The work has been well done. Accuracy of statement has been kept in view, facts are presented with conciseness and in interesting language, and no important subject has been overlooked. The illustrations are well selected, but the printing is not always up to the mark. As it stands, the work is without a rival among School Geographies in America. The authors have purposely omitted maps, and for these the pupil is sent to his atlas.—*Bulletin of the American Geographical Society, September, 1890.*

NOTE ON MANCHESTER RAINFALL DURING THE TWELVE YEARS 1878 TO 1889.

BY REV. L. C. CASARTELLI, M.A., Ph.D.

[Read to the Members at the Memorial Hall, Wednesday, December 3rd, 1890.]

MY original intention in preparing this note was simply to give a general table of the results of the rainfall observations at St. Bede's College during the decade 1878-87. Since then, partly owing to delay in drawing up the tables, I resolved to extend the scope of my returns to the end of last year, 1889. It also occurred to me that, in order to get a general view of the condition of the rain supply in and around Manchester, it would be desirable to compare our own returns with those of other observers. The means of doing so was afforded by consulting the annual volumes of "British Rainfall," edited by Mr. G. J. Symons, F.R.S., and containing annual returns from various local observers.

I have accordingly compiled a general table, containing the total annual readings registered at some nineteen different places in our district and taken from Mr. Symons's work.

It will be noticed that some of these records are complete, extending over the full twelve years, 1878-89. Others are only partial, extending over lesser periods ranging from eleven years to one year. However, I have thought it best to include all.

Few kinds of scientific observations are more liable to local disturbance and individual errors than those of rainfall. The greater the number of different observations, therefore, that can be secured over a given area, the better chance of eliminating the effect of personal and local error. Moreover, we can thus draw conclusions as to general conditions of rainfall in the district as a whole.

A few words of explanation as to the table.

The period 1878-89 has been selected by me because we began our observations here with 1878.

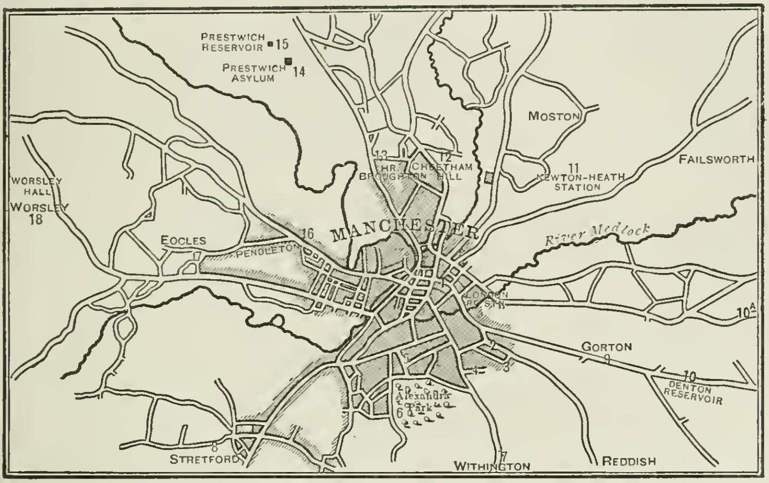
At the foot of the column for each year I have given the average of all the readings at the different stations as reported for that particular year. At the end I have taken a general average of all these annual averages. With regard to the total average for each locality, I have been in some difficulty; for, as remarked above, only some of the observations cover the entire period of twelve years. From these, therefore only, I have been able to get a twelve years' complete average, as indicated in average column A.

ANNUAL TOTAL RAINFALL.

No. on Map.	STATIONS.	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	AVERAGE FALL.			
														Twelve Years, 1878–89.		Decades.* C	
														A Complete 12 years.	B Partial.	1860–9	1870–9
1	Piccadilly	34·35	34·22	36·93	40·96	46·20	39·03	30·43	30·37	34·56	18·75	26·58	25·90	33·19	..	36·78	34·72
2	Ardwick	33·58	32·89	36·51	39·49	43·53	36·85	28·48	31·61	39·61	21·26	28·40	..	..	33·84	..	..
3	Plymouth Grove	34·77	33·35	36·00	37·41	42·70	36·44	29·11	31·79	39·36	21·71	30·86	30·58	33·67	..	..	..
4	York Place	..	..	..	..	..	..	..	..	..	20·69	29·32	..	..	..	..	..
5	Embden Street	..	..	..	..	..	..	..	32·05	42·39	22·86	34·63	32·93	..	..	..	..
6	Alexandra Park	33·90	36·51	39·68	39·68	38·45	34·66	30·70	29·31	33·14	18·40	25·61	25·92	31·53	..	..	..
7	Withington..........	31·73	31·15	34·65	34·61	41·70	33·41	27·11	30·45	36·14	20·64	27·00	29·56	31·51	..	..	..
8	Stretford	..	..	..	..	40·88	33·95	24·81	30·04	37·68	19·62	27·12	28·13	..	30·28	..	..
9	Gorton	33·64	30·66	35·39	34·92	40·56	35·55	27·06	27·79	35·72	18·48	28·87	28·81	31·45	..	33·71	34·14
10	Denton Reservoir....	32·64	31·55	36·82	36·44	43·43	35·74	27·14	28·01	36·41	18·57	29·71	29·86	31·36	..	32·97	33·78
10*a*	Fairfield	33·59	31·23	36·80	38·11	46·77	37·91	30·43	..	43·76	23·78	36·04	32·90	..	53·57	40·90	37·66
11	Newton Heath	..	35·93	39·34	41·60	51·22	39·66	31·76	34·89	42·40	22·58	32·17	..	..	37·15	..	..
12	Cheetham Hill	..	..	..	..	..	..	..	..	39·42	22·21	31·13	30·16	..	..	..	..
13	Higher Broughton ..	..	..	..	..	..	..	..	..	..	24·18	31·87	34·30	..	..	..	..
14	Prestwich Asylum ..	36·13	35·27	..	38·22	49·62	38·61	32·22	36·78	42·05	23·94	33·95	34·72	..	36·52	..	..
15	Prestwich Reservoir..	35·36	34·32	37·95	40·99	46·31	37·83	31·19	35·41	38·69	21·53	31·88	30·96	35·20	..	..	..
16	Pendleton	..	..	..	..	46·79	..	..	..	..	..	..	..	..	..	..	..
17	Eccles	..	..	37·67	41·00	53·16	46·61	..	..	..	..	..	..	..	..	..	..
18	Worsley Hall	..	..	..	..	..	37·41	26·46	31·70	35·57	19·66	28·55	27·58	..	..	..	..
	Yearly average of all stations......	33·97	33·37	36·16	37·84	45·09	37·40	28·99	31·55	38·46	21·16	30·21	30·16	33·70 General Average.			

* From Symons.

For such of the remainder as cover an important period out of the twelve years I have made up averages, according to their number of years, in column B. For some observations, however, I have not thought it worth while making up an average. This is particularly the case with any record that does not embrace both the years 1882 and 1887, for a reason to be indicated later on.



Sketch-Map to illustrate "Note on Manchester Rainfall, 1878-89.' The numbers 1 to 18 indicate the observers' stations referred to in the General Table. (See pp. 178 and 182.)

In order not to encumber the table, I have not given in it the names of the observers or authorities, nor the height of the place of observation above sea-level, as printed in Mr. Symons's returns. To remedy this omission I give these details below:—

No.	Station.	Observers.	Height of Place above Sea-level. Feet.
1.	Piccadilly	M. S. and L. Ry. Co.	194
2.	Ardwick	Mr. J. Casartelli	140
3.	Plymouth Grove	Alderman J. F. Roberts	150
4.	York Place	Mr. E. Worthington	125
5.	Embden Street	Mr. J. Hart	112
6.	Alexandra Park	St. Bede's College	94*
7.	Withington	Mr. J. King, jun.	110
8.	Stretford	Mr. H. Royle, C.E.	86
9.	Gorton	Mr. J. F. Bateman, F.R.S.	263
10.	Denton Reservoir	Mr. J. F. Bateman, F.R.S., and Mr. G. H. Hill, C.E. (1889)	324
10.*a*	Fairfield	M. S. and L. Ry. Co.	312
11.	Newton Heath	Mr. J. Warren	242
12.	Cheetham Hill	Mr. W. B Worthington	255
13.	Higher Broughton	Mr. W. Wilson	200
14.	Prestwich Asylum	The Meteorological Council	295
15.	Prestwich Reservoir	(Same as 10)	347
16.	Pendleton	Miss Withington	180
17.	Eccles	Mr. W. G. Birchley	100
18.	Worsley Hall	Mr. W. B. Upjohn	80

*From 1880 to 1888, 176 (on top of building).

We may now deduce a few general results from a study of the table:—

1. Special importance attaches during the twelve years' period to the two years 1882 and 1887. The former was the *wettest* year of the period (having on the whole 11·39 inches *above* the average of the period); and the latter (our splendid Jubilee and Exhibition year) being by far the *driest*, with 12·54 inches average *below* the average of the period. Indeed, I suppose the year 1887 showed the lowest amount of rainfall for at least half a century, and possibly a much longer period. These facts will explain why, in average column B, I have not thought it desirable to calculate for any station whose returns do not cover *both* the extreme years 1882 and 1887.

2. We can arrange the years according as their rain-crop rises above or below the general average of the period (33·70 in.) as follows:—

Over the Average.		Below the Average.	
1882	45·09	1879	33·37
1886	38·46	1885	31·55
1881	37·84	1888	30·21
1883	37·40	1889	30·16
1880	36·16	1884	28·99
1878	33·97	1887	21·16

The twelve years are thus equally divided. The two years following the peculiarly dry year 1887 have both been considerably below the average—indeed, but for the low readings of 1884, these last three years would stand together at the bottom of the scale.

3. A decided *local* grouping will also be observed.

(*a*) On the whole, it will be seen that the stations 1, 2, 3 (Piccadilly, Ardwick, Plymouth Grove), show a remarkable similarity in both yearly readings and averages, and form one local group.

(*b*) Another such group is formed by Alexandra Park, Withington, and Stretford, with a generally lower average, by two or three inches, than the preceding.

(*c*) Gorton and Denton averages agree not only with each other, as might be expected, but also to a remarkable extent with the preceding group.

Fairfield, though so near, stands strangely apart in having a much higher fall.*

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*I may here say I had not originally intended to include Fairfield in my purview.—I even had not provided for it in the map-list, so that I have to number it 10*a*. I also regret very much to have lost my notes giving the Fairfield total for 1885, as recorded in Symons. The record is really complete, but I have not at hand the means of consulting it.—L. C. C.

4. A still wider conclusion, based on the above, can be drawn by glancing at the map. If we take the line formed by the river Medlock on the east side of Manchester and by the river Irwell on the west side of it, we shall have a line which divides the area of the map into two regions, one to the north and one to the south. Now it will not fail to be noticed that of these two regions the rainfall in the southern one, embracing the stations numbered 1 to 10a inclusive, is—again with the solitary and striking exception of Fairfield—generally *lower* than the rainfall in the northern half, containing the stations numbered 11 to 18. In the latter region, however, Worsley Hall seems an exception, the readings there being more like those of the southern half, and often very close to the general average (*re* 1883, 1885).

5. It is, of course, necessary to take the readings of rain in connection with the height of the land. It will be seen, by comparing the results just given with the preceding table of heights above sea-level, that, taking stations 1 to 8 in the southern districts, their height above sea-level ranges from 86 to 194 feet, with an average of 132 feet. Gorton, Denton, and Fairfield, in this area, stand much higher—263, 324, and 312 feet respectively. Similarly in the northern section, stations 11 to 16 range between 180 to 347 feet above sea-level, with an average of 253 feet, nearly double of the groups 1—8. And in this same region Worsley, which forms an exception by reason of its smaller rainfall, also forms a still more striking exception by reason of its lowness of elevation, only 80 feet above sea-level or lower than any station even in the southern part. Thus, on the whole, there is seen to be a tendency to more rainfall on the higher ground, and *vice versa.*

6. The most general conclusion that we can draw from the returns of these twelve years is that our average rainfall for the whole period and the whole area is 33·70 inches, or a little less than thirty-three inches and three-quarters. Such is the average water-crop of "Rainy Manchester." *

I have to thank the "Victorians" for the maps prepared by them to illustrate these remarks. The following table will explain the small map herewith, the number of the stations only

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* For the sake of comparison, I give a few averages for the twenty years' period 1860-79, compiled from Symons. Unfortunately he has not yet published those for the period 1880-89, so the two periods do not coincide. The comparison has therefore less value. Of course I omit the Lake Districts, where the rainfall is, for England, phenomenal:—

	Inches.		Inches.
Arncliffe, Yorkshire	60·51	Tavistock, Devon............	47·94
Bolton (Belmont)	58·26	Heywood.....................	44·40
Halifax	49·03	Whaley, Cheshire	43·63
Stonyhurst	48·65	Chapel-en-le-Frith	42·25
Bolton (The Folds)	48·05		

being shown for want of room. The *upper* figure at each station indicates the *average* rainfall during the period of observation; the *lower* figure indicates the number of years over which the average has been taken; the number in *brackets* the *height* of the station above sea-level. Thus, for Ardwick.

$$\frac{33{\cdot}84}{11}\ (140)$$

indicates an average fall of 33·84 inches, made up from eleven years' observations, the station being 140 feet above sea-level,

1. $\frac{33{\cdot}19}{12}$ (194)

2. $\frac{33{\cdot}84}{11}$ (140)

3. $\frac{33{\cdot}67}{12}$ (150)

4. ? (125)

5. ? (112)

6. $\frac{31{\cdot}53}{12}$ (94, 176)

7. $\frac{31{\cdot}51}{12}$ (110)

8. $\frac{30{\cdot}28}{8}$ (86)

9. $\frac{31{\cdot}45}{12}$ (263)

10. $\frac{31{\cdot}36}{12}$ (324)

10*a*. $\frac{35{\cdot}57}{11}$ (312)

11. $\frac{37{\cdot}15}{10}$ (242)

12. ? (255)

13. ? (200)

14. $\frac{36{\cdot}52}{11}$ (295)

15. $\frac{35{\cdot}20}{12}$ (347)

16. ? (180)

17 ? (100)

18. ? (80)

QUEENSLAND METEOROLOGICAL OBSERVATORY.

A SHORT NOTE ON THE WORK OF MR. CLEMENT WRAGGE.

[Read to the Members, Wednesday, December 3rd, 1890.]

Mr. Clement Wragge, a brilliant young scientist, who for some time was an assistant at the Ben Nevis Observatory, has been entrusted by the Queensland Government with the work of instituting and perfecting meteorological stations for that colony.

He has laid down very able directions and rules for the observers, and has succeeded in obtaining a sufficient number of stations in the colony and in other parts of Australia as will enable him to give the daily climatic changes of Australia.

It is a remarkable thing that from Brisbane we should receive the daily report of the weather from all parts of that continent.

Mr. Wragge has sent us the Act constituting his department, the instructions to the observers, a list of the stations of observation, and daily sheets of the weather for several months. The whole matter is creditable to the Queensland Government and to Mr. Wragge.

The practical use for commerce is that warnings of coming changes can be given, as the telegraphic announcement of waves of changes are transmitted to all the ports.

To agriculture the result, when a number of observations extending over a sufficient length of time enables the observer to gather up the knowledge, will be of great service ; and to science generally, when the Australian results are connected with the splendid work of the American signal service and our own meteorological department, they will be of incalculable value.

In this short note I wish to draw the attention of the meteorologists of the society to the work being done, and when the whole of the year's daily sheets are to hand another opportunity will be taken to estimate the results of the observations.

Captain Van Gele's Exploration on the Mobangi River.—Captain Van Gele has been out of sight and hearing for over a year, exploring the Mobangi, the great northern tributary of the Congo, and its affluents. A detailed report of his discoveries has at last reached the *Mouvement Géographique.* On the present expedition he was well supplied with instruments, and he discovered that the great bend of the river above the Zongo rapids should be shifted about half a degree further to the north than its position on his first map. He found several new stations, and throughout these months of work the health of the explorer and his party was excellent. The Yakoma natives, who received him with hostile demonstrations during his first visit and finally prevented his further advance, assumed a more friendly attitude during his last journey, and finally Van Gele won their confidence and assistance. He explored for a considerable distance some of the important affluents of the right bank, of which the Koangu and Kotto are the largest. He is still exploring the river and its upper branches.—*Goldthwaite's Geographical Magazine, April, 1891.*

Dr. Peters' Travels in East Africa.—Dr. Peters has returned to Europe after performing a very remarkable expedition in East Africa. His name and his deeds have of late been so much before the public that it is unnecessary to describe his experiences in any detail. He who was given up as lost, and was universally lamented in obituary notices, has now returned home, as vigorous as ever, and quite prepared to continue his career as a pioneer of German colonisation in Africa. A few general particulars may be given. He left Witu last July, and proceeded up the river Tana to the neighbeurhood of Kenia. Lake Baringo was reached on January 7th, 1890, and Kavirondo at the end of the month. By the early part of February he was only six days' march from Emin Pasha's first station, where he learnt from the Waganda that the Pasha, to whose relief he had ostensibly set out, had departed in the train of Mr. Stanley. Nevertheless, Dr. Peters continued his journey westwards until the native information he had received in regard to Emin Pasha was confirmed by a letter from Mr. Stanley, which he intercepted and opened. He proceeded to Uganda, where he remained a short time, and eventually to Ugogo and M'pwapwa. On his arrival at M'pwapwa on 19th June he met Emin Pasha. On the 16th July he reached Bagamoyo. Owing to the smallness of his caravan and the hostility of the natives Dr. Peters had to fight his way step by step for the greater part of his journey. His privations and dangers were extreme ; but he survived them all. It will be a disappointment to him, no doubt, that, in consequence of the recent Anglo-German agreement, the bundle of treaties he brought back will now be valueless.—*Scottish Geographical Magazine, September, 1890.*

SIR WILLIAM MACGREGOR'S ASCENT OF MOUNT VICTORIA, AND EXPLORATIONS OF THE OWEN STANLEY RANGE, BRITISH NEW GUINEA.

By J. P. THOMSON, F.R.S.G.S., &c., Hon. Secretary and Treasurer of the R.G.S.A., Brisbane.

[Read to the Members in the Library, Tuesday, March 18, 1890.]

THE chief object of this paper is to supply geographical science, through the medium of our society,* with information concerning the physical features and other geographical conditions of the hitherto entirely unknown and imperfectly known sections of the far-famed Owen Stanley Range, situated in the middle of a torrid region—the youngest of the offspring of a loving, gracious, and munificent mother, zealously and faithfully nursed by our distinguished member, to whom the guardianship has been entrusted; also to show intending explorers the numerous obstacles to be met with in these and similar regions, and the resolution, courage, and skill necessary to surmount them.

The successful ascent of a range of mountains slightly exceeding 13,000 feet would, in the category of ordinary exploratory feats, not arouse in us so much interest, but when we look back upon our past experiences in British New Guinea, as regards results and pecuniary measures, we may perhaps be pardoned for an apparent exuberance of geographic enthusiasm.

For the many data necessary in the preparation of this paper and its illustrations, I am, it is almost needless to state, indebted to Sir William MacGregor, to whom I accord my humble thanks.

The expedition which left Port Moresby on April 20, 1889, proceeded in a boat to Galley Reach, about thirty miles to the west, where the Vanapa river was entered by one of its deboucheries opening into the eastern side of Galley Reach, not previously noticed nor shown on the charts. From its mouth to the highest limits of tidal influence the banks of the river are covered by dense mangroves, but above that limit the banks are from 10 to 12 feet high, composed of deep rich soil studded with ilimo and other large trees. Owing to the presence of numerous snags, the existence of strong rapids, the discolouration of the water by heavy interior rains, and the tortuous sinuosities of the river, its navigation was slow and tedious, and an application of the best efforts resulted in its ascent to a place only about forty miles by water from its mouth, which was reached on the 27th of the same month, where the principal depôt was formed, the latitude of which was found to be 9° 7′ S.

From about fourteen miles from its mouth the banks of the river are formed by steep forest-clad hills, into whose clayey and slaty formation the careering of its deposit-laden waters has cut its deep eroded furrows, indicating the passage of ages by its grim wrinkles and deep fissures.

No natives were seen near the banks of the river from its mouth to the depôt by the first section of the expedition, but their traces were indicated by the existence of a cleverly-constructed suspension bridge across the Vanapa river, at a place where it is narrowed by the encroachment of a rocky escarpment of the hills, the end of which produces a large tree of the banyan variety, the trunk of which supports an end of the bridge 50 feet above the surface of the river. From this point the bridge, which is seventy yards long and composed of rattan cane, stretches to the opposite side of the river, where it is attached to a somewhat small tree supported by a stout post, both of which are again stayed by rattans to trees further back. This structure was carefully and minutely examined, and revealed to a very considerable degree the constructive faculties of a primitive race of people.

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* The Royal Geographical Society of Australia.

After the depôt had been established, some of the party were sent back to Port Moresby for reinforcements, while Sir William in the interim was fully engaged upon a preliminary examination of the neighbourhood, the sketching out of a line of march towards the high lands of the interior, and the procuring of such data as might assist the future movements of the expedition. The course of the Vanapa was also traced for several miles above the camp, and, although assisted by only one man, a track was cut through the scrub and jungle, for a distance of seven miles in the interior, along the line of march. His Honour's movements were much impeded by the ill-health of his few followers, and the afternoon torrents of rain which spread from the thunderstorms of the interior. The forenoons were sultry, and the vegetation soaking wet in the morning. Although traces were everywhere observed, no natives were seen. This district possesses a dense forest, many of the timber trees of which are valuable. Included in these are the cedar and ilimo ; the latter is supposed to be white ant proof. Cultivation is rendered impracticable through the narrowness of the gorges and the steepness of the hills, the latter being composed of slate, with numerous thin veins of white quartz. This may be accepted as the general geological condition of the district. In some of the creek beds large isolated boulders of conglomerate and smaller ones of basalt were observed, but no traces of gold or other valuable metals were found.

While exploring the district about two and a half miles from the depôt, a prominent rock, which was named Jack's Rock, was discovered on Mount Gleeson. This rock, whence a clear unobstructed view of the high lands of the interior, even to the summit of the Owen Stanley Range, may be obtained, is situated at an altitude of about 1,000 feet above the sea-level, and its point of vantage is strongly recommended to future observers.

On the 17th May, reinforcements having arrived on the previous day, the expedition, which then numbered forty-two persons all told, composed of four Europeans, eorge Belford, a Samoan half-caste, five Polynesians, and thirty-two Papuans, started for the interior. The highest point of the long spur of Mount Gleeson was traversed at an altitude of 1,292 feet. Another ridge of about 800 feet high was crossed, and the evening camp made at the confluence of the Exton Creek and the Vanapa river, at an altitude of about 300 feet. From Exton Junction the expedition crossed over two miles of broken country, composed of very steep and precipitous ridges, the altitude of which did not, however, exceed 700 or 800 feet. Several creeks were also crossed and their beds examined, but, although the formation was slate and quartz, with favourable indications of gold, none was found on washing the gravel.

Taula Creek was reached at an altitude of 583 feet, and the steep western end of Guba Hill ascended and crossed at an altitude of 1,000 feet. The geological conditions of this district are of a quartz and slaty nature, the hills rugged and precipitous, and the timber of no great proportions. Although many of their traces were observed upon the trees along the ridges, yet no natives were, at this stage of the journey, seen. Cæsar Hill was traversed, and the Atoa Creek—a fine clear stream of twenty yards breadth, with a slaty and basaltic border bed—crossed at the 500 feet level. The steep rough spurs and ridges of Mount Kowald were next ascended, its summit crossed at an altitude of 2,750 feet, and its northern side descended to the right bank of the Vanapa river, the current of which at this point runs very rapidly over a rough rocky bed. Although straight and in great abundance, the timber trees on Mount Kowald are not of large proportions. The crossing of the Vanapa river, which was accomplished by means of a raft constructed by Mr. Belford, who gallantly and voluntarily swam the muddy seething torrent, was a tedious and difficult task, owing to the partially flooded condition of the river and its irregular and obstructed channel. The expedition continued its journey for a short distance along the left bank of the Vanapa, until impeded by the intrusion on its banks of the huge rocky escarpments of mountains, which narrow the river's course and render the traverse of its bed impracticable; consequently the spurs of Mount Belford were ascended, and the march continued along the crest of its summit at a height of 3,500 feet, thence down the precipitous and rough northern side of the mountain to the Joseph river, which, winding along the southern base of Mount Musgrave, at this point passes the 2,635 feet level.

The formation of Mount Belford is of the usual slaty and quartz nature, covered with forest of fine timber trees, and, like Mount Kowald, more frequented by birds than any other section of the country through which the expedition passed. From the existence of their paths and camp sites, the mountain region appears to be largely patronised by native hunters, although they neither plant nor reside on it. Tall and graceful wild bananas, a pepper somewhat similar to the *Piper methysticum*, only in this case growing as a tree from 20 to 30 feet high, a very fine rhododendron, and several other rare and valuable botanical specimens, were observed on Mount Belford. The natural history department was also strongly represented by that silent and pestiferous insect the scrub tick.

Following a native hunting-path up a spur from the Joseph river, the expedition ascended the slopes of Mount Musgrave, to the crown of one of its main ridges, at an altitude of 5,000 feet. Here was found a large hunting house, to which was given the name of Goodwin Lodge. This house, which was about 25 feet long, 10 feet wide, and 6 feet high, having a roof covered with the leaves of a dwarfish pandanus tree, presented the appearance of recent occupation, and, although one of their dogs was running about, no natives were seen, nor responses heard to vigorous inviting shouts. The ground around the house was wet and swarming with leeches, and the atmosphere alive with mosquitoes, so that a prolonged halt at Goodwin Lodge was considered undesirable. Following the crest of the ridge in a westerly and northerly direction from Goodwin Lodge, the expedition reached the main crown of Mount Musgrave, at a height of 5,588 feet above sea-level, where it camped. Taking advantage of a short halt made here for the purpose of forwarding the rear baggage, the native path was followed to the western end of the crest of the mountain, whence angles were taken to and good views obtained of the Owen Stanley Range, and the general conformation of its southern aspect. From this point a large native village was seen on one of the ridges at the foot of the south-west spur of Mount Knutsford. The many noises peculiar to native festivity were heard during the first night on the mountain, proceeding from a locality apparently situated some miles to the north-west, and the next day they honoured the camp by a visit. Friendly relations having without difficulty been established, the expedition was visited by numbers of these mountain people during its stay in the locality, and the relations throughout were of the most friendly character, a circumstance which rendered the operations of the expedition agreeable, and the services of the natives of great value in the supply of food. Their language bears strong relations to the Papuan dialect, and they are physically stronger than the coast men, perhaps a little shorter, having long, strong bodies, but generally shorter and more muscular legs. They wear neither nose nor ear ornaments, nor do they tattoo. The older men wear caps made of the best of cuscus fur, with frontal ornaments made of white shells ground down to thin plates, and sewn together with check pieces of black cassowary feathers. Others wear caps that are less picturesque, though more elaborate, trimmed with the tusks of boars and the teeth of dogs. Youths generally affect head-pieces made of native cloth, apparently manufactured from the bark of the mulberry tree, into which they gather their thick mops of hair. On the breast they wear a piece of network, with small meshes about 8 to 10 inches deep, and long enough to extend rather more than half way round the ribs, from where it is fastened behind by strings from its four corners. They all wear the perineal band, as worn at the eastern end of New Guinea, but every man and boy is clothed with an additional girdle of the cloth made from the bark of the mulberry tree, about 10 or 12 inches deep, cut up into lappets, over which they also wear in front as an apron a small net bag about from 9 to 12 inches in length. On the neck, legs, and arms they wear rings of cane, some of which are plain, others plaited or twisted. Their features, which are remarkably good, indicate more character and strength than those of the average coast man, and the cheek bones in many are rather broad and prominent. The nose is generally of the Semitic type, with nostrils either not arched or more so than is usual in Papuans ; the chin and under jaw are also stronger. Although less shy than other tribes, having seen more of white men, and possessing all the volubility of the Papuan race, they are apparently superstitious and nevertheless easily frightened. Although weapons of any kind were never seen in their possession, they stated that the bow and the spear were both used by them. They grow yams, sweet potatoes, several varieties of bananas, good tobacco, and possess abundance of food, which they readily exchanged for salt, beads, and cutlery. Doubtless, owing to its possession, they do not prize tobacco. Small parcels of peas, beans, and tobacco seeds, which they cultivate, were procured from this interesting tribe of natives, who always made a rule to leave the explorers' camp before nightfall. None of their women were seen. After a day had been spent in camp on the main crown of Mount Musgrave, the expedition continued the ascent of its crest, along which it proceeded for a distance of two miles, and again camped at an altitude of 7,180 feet. The temperature here was 70° at noon and 60° at night, and the climate raw and foggy. Everything upon the face of the mountain was saturated with moisture and clothed with moss, which lent to the sombre forest a weird and lonely aspect, and even at this altitude the mosquitoes were troublesome. Next day the traverse of the crest was continued, when, after ascending to a place 8,000 feet above sea-level, and observing no indications of a favourable connecting spur with Mount Victoria, the expedition retraced for a mile to the 7,180 feet level, and commenced the difficult and perilous descent of the northern face of Mount Musgrave to the 6,000 feet level, where further progress was then arrested by a precipitous line of rocks, crossing the path at right angles. The dangerous position of the expedition at this stage was rendered more critical by a dense curtain of mist, which so completely enveloped it as to render an observation of surroundings impossible. Compelled by circumstances, the party camped for the night in this inhospitable and miserable position, subjected to a temperature of 58° Fahrenheit at night, 60° in the morning, and 67° at noon. Next morning the aspect was so uninviting that the Papuan members of the expedition refused to proceed on the journey. However, after the administration of certain medicine, many real and pretended cases of sickness were cured, and a start being made, Sir William succeeded, single-handed, in cutting a track right down the rocks and precipices, which was probably the most precipitous and dangerous ever traversed by carriers—even the natives at first refused to risk the descent, but, after being assured of the safety of their leader, they eventually hazarded the dangers of the path, and, by great perseverance and unflagging exertions, the expedition descended to the edge of a small creek, at an altitude of 4,300 feet above sea-level, weary and greatly discouraged by small progress and inhospitable surroundings. At the 3,380 feet level on Mount Musgrave, a small precipitation occurred at night, and the whole zone was enveloped in fog. At an altitude of 5,588 feet a little rain also fell towards the evening, and the fog envelope commenced to close before noon. The trees of this zone are not of large size, and most of them appeared to belong to the myrtaceous family. There is plenty of fine timber growing below the 6,000 feet level, but above that altitude the trees are smaller and generally very crooked. The summit of the mountain, which was found to be 9,150 feet high, is narrow in places, but not so rocky as a distant view of its general appearance indicated. The geological conditions of the whole mountain, from base to summit, are slate and quartz, with well marked white veins of the latter, between the 6,000 and 7,000 feet levels. Owing to the unsatisfactory physical condition of several members of the expedition, Sir William was obliged to continue the journey from last camp, at the 4,300 feet level on the north side of Mount Musgrave, with only Mr. Belford, two Polynesians, and six Papuans; Mr. Cameron, his honour's acting private secretary, with the remainder of the party, at his own wish, returned to the camp on Mount Musgrave, and awaited Sir William's return.

Continuing the descent across a succession of precipitous cliffs and rugged gorges, bristling in their grim and desolate solitude, the expedition succeeded in reaching the base of the steep rocks at the foot of Mount Musgrave, and the Vanapa river at the base of Mount Knutsford, about noon on the same day. The Vanapa at this place runs west by south, and is not more than half the size of its section at the west end of Mount Belford. As a traverse of its channel, which was thirty to forty yards wide, was altogether impracticable for men carrying packs, and dangerous under whatever circumstances, owing to its obstruction by huge irregular boulder piles, and seeing no easier accessible route over the comparatively short gap of three miles which separated them from Mount Victoria, it was decided to ascend Mount Knutsford, and follow the steep spur connecting it with the Owen Stanley Range. Accordingly the dangerous and difficult task of crossing the Vanapa river was undertaken, and accomplished by means of a temporary bridge constructed by Mr. Belford, at a place where an accident or fall from it into the river would have resulted in certain death. The altitude of the river at this crossing was 2,790 feet above sea-level, and the temperature at mid-day 68° Fahr. From the left bank of the river they commenced the ascent of one of the leading spurs of Mount Knutsford, which was rugged and precipitous, and camped at two native houses used by them as a halting-place, at an altitude of 500 feet above the river crossing. At this point no rain fell, but there existed a partial obscuration by fog from early in the afternoon. Next morning the ascent of the mountain was continued, and after traversing an estimated distance of two miles, the evening camp was made at the 6,500 feet level, where the temperature at 3 p.m. was 72°, and at 6 p.m. 67°. This region was completely enveloped in fog by the middle of the afternoon, but no precipitation occurred; and here, as on the higher zone of Mount Musgrave, the trees were generally not large, and the forest possessed a similar myrtaceous character, and, excepting a few mountain pigeons, which were hard to obtain, no game was seen. The ascent was commenced early next morning, and a distance of one mile traversed by noon, when the temperature was 64° Fahr., and the whole region completely enveloped by a column of dense fog. After a most laborious and difficult ascent of the almost perpendicular face of a precipitous and rugged spur, which, but for the existence of the friendly roots, trunks, and branches of moss-draped trees, would have been inaccessible to packers, a camp was made in the afternoon, on a razor-backed ridge barely wide enough for a path, at an altitude of 8,300 feet, where the last shower of rain met with on the upward journey fell. Excepting the small quantity caught from this shower no water could be obtained at this camp. This region was remarkable for its awful, depressive, death-like stillness, which was doubly intensified by the grim sepulchral appearance of the trees, with their roots, trunks, branches, and, slightly, even their leaves, enshrouded in thick clinging garments of moss, which rendered them dismal to the eye and repulsive to the touch. The surface of the ground and the vegetation were soaking wet, and the dense curtain of vapour, especially when its wavy motion caused it to ascend from the abysmal ravines, or break on the rugged spurs, caused the surroundings to appear more gloomy and awe-inspiring, and the rugged and precipitous spurs and ridges even more terrible and inaccessible than their real condition indicated. Even the birds aided nature in its dismal solitude by withholding their cheerful sounds ; the leaves of the forest emphasised the stillness of the region by the absence of their rustle ; while the members of the expedition appeared enthralled by the intensity of the solitude, for they seldom conversed, and uttered but whispers. At this camp the number of the party was further reduced by one Polynesian and three Papuans, who were sent back to the camp on Mount Musgrave. Twenty pounds of rice was hidden in a secure place at this camp, and the party, now consisting of his honour, Sir William MacGregor, Mr. Belford, Joe Fiji, and three Papuans, provisioned with fifty pounds of rice, thirty pounds of flour, about six pounds of ham, about the same quantity of salt beef, and armed with two shot guns and one revolver, continued the journey on the morning of the 4th June, without breakfast, and after proceeding three-quarters of a mile up the face of Mount Knutsford, they camped at a native hunting depot, with three cooking places excavated in the ground about 18 inches wide, nearly the same depth, and half filled with small stones. The altitude of this camp was 8,815 feet, and the temperature at noon in the shade 63° Fahr. As the forest trees were larger and straighter and there existed less abundance of moss than in the region between 6,000 and 8,000 feet, and as it was found that the upper margin of the dense afternoon fog that had settled down on the region immediately below reached no higher, it was considered that this camp marked the upper line of the dismal, wet, vaporous, mossy zone.

The next day, at an altitude of 9,000 feet, the expedition entered an undergrowth of bamboos, with stems about an inch in diameter and easy to cut. This continued until the 9,500 feet level was reached, when the character of the bamboo changed entirely. Here the stems grew as close together as wheat, and their tops ran completely over and entirely obscured the heads of the tallest trees, so that the task of cutting a track through them was both tedious and laborious ; nor was this condition of bamboo forest changed till the expedition left Mount Knutsford, beyond which there was none. The zones of moss and mist, which are apparently inseparable, end together, and a fine dry climate begins with the bamboo, which is never lost till a descent is made to the 8,000 and 8,500 feet level into fog and moss. At 2 p.m., on the 6th June, the summit of Mount Knutsford was reached, and its height found to be 11,100 feet above sea-level. The climate here was magnificent—a dry and cold atmosphere, possessing a temperature of between 60° and 70° Fahr. during the middle of the day, in the partial shade of the forest, and 40° to 45° Fahr. at night and in the early morning. This position was some 2,000 or 3,000 feet clear above the great masses of snow-white clouds, which completely cut off all view of the lower regions. The top of this mountain culminates in two great accessible masses of rock, each about 100 feet high, separated by a space of about a quarter of a mile, upon the middle of which is situated a smaller and lower mass of rock. The limited area of these rocky peaks was covered with an Alpine flora, which also flourishes in the highest 500 feet zone of the mountain. Specimens of all these were obtained, but, altogether, the limited flora of Mount Knutsford was considered disappointing. From base to summit the geological conditions of this mountain are diorite and crystalline micaceous schist.

The clouds in this region, which were apparently motionless, excepting an occasional projection of small jets of vapour shot upwards through narrow ravines right to the summit of the mountains, were considered to be formed solely by the union of local causes and not brought thither by the south-east winds. The upper surface of this stratum of cloud, which is usually about 4,000 to 5,000 feet thick, is like a field of snow, almost dazzling in its whiteness, and its rugged masses, which are irregular in their serration, extend their hoary flakes so far as to obstruct the vision beyond their limited horizon, while the tops of the higher mountains rear their lofty and majestic heads from 2,000 to 5,000 feet above this Arctic landscape, which causes them to assume the appearance of islands in a silvery sea of glassy smoothness. on the early forenoon, before the obscuration of the lower regions occurred, which was usually about ten o'clock, a clear view could be obtained of the country bounded between the top of Mount Knutsford and the south coast. It was also observed that numerous plantations and plantation houses were located on the north side of Mount Musgrave, and that the only permanent villages and human habitations observed on any section of the Owen Stanley Range were situated on Mounts Knutsford and Griffith. The altitude of the sites of the permanent villages did not exceed from 4,000 to 5,000 feet above the level of the sea. From the top of Mount Knutsford the most extensive and effective view is obtained of the basin and course of the river Vanapa, through which the whole of the south waters of the Owen Stanley Range flow. This river divides at the north-west end of Mount Musgrave into two branches. The one trending west drains the eastern waters of Mount Cameron, the eastern and southern waters of Mount Lilley, and the southern waters of Mounts Thynne and Griffith. The eastern branch gravitates at first between Mounts Knutsford and Musgrave, thence for a short distance separating the former from Mount McIlwraith, till they are divided by a projecting offshoot of Mount Victoria. The river then forms itself into five divisions—the first branch flows between Mounts McIlwraith and Morehead ; the second between the latter and Mount Victoria ; the third between the latter and the southern slopes of Mount Douglas ; the fourth between the latter and Winter Height ; and the fifth, which is the principal and true head of the Vanapa river, flows between Mounts Griffith and Knutsford on the south, and that part of the Owen Stanley Range named Winter Height on the north. The lower and middle section of this river is well adapted for the transportation of timber ; but, owing to the immense boulders and stones which obstruct the channel, the upper section from the west end of Mount Musgrave is impracticable for navigation. Mounts Service, Morehead, and McIlwraith attain to altitudes of from 10,000 to 11,000 feet, and are situated between Mount Victoria and the Brown river, which is a branch of the Laroki.

On the 8th June the journey was continued in a north-westerly direction, along the summit of Mount Knutsford ; and, for the last time on the outward journey, across the Vanapa, at a place 10,130 feet above sea-level, where the river is five yards wide, with a very rocky channel. On crossing the river the ascent of the central spur of the Owen Stanley Range was commenced, and on the afternoon of the 9th Winter Height was reached, at an altitude of 11,882 feet, on the top of the great central ridge of the Owen Stanley Range. Continuing the march on the same day a camp was made on the lowest part of this ridge, between Mount Douglas and Winter Height, where the top of the gorge on the south watershed meets a similar formation on the north watershed, at an altitude of 10,884 feet above the sea. The forest here was mainly composed of cypress, and the only sound to break its silence was the howling of the wild dogs. Next day the march was continued, the top of Mount Douglas passed over, at a height of 11,796 feet, where strawberries were found, excellent in flavour, but not of large size; and after travelling a distance of five or six miles, camp was pitched at a point on the main Owen Stanley Range, some few hours' march from its highest crest, which was reached at 11 a.m. on June 11. This culminative crown, which was named Mount Victoria in honour of Her Majesty the Queen, possesses no trees within 1,500 feet of the top, and but few bushes within 1,000 feet thereof. It, however, possesses a great variety of grasses, daises, buttercups, forget-me-nots, heaths, &c. Of the birds, which were very few and uninteresting, three specimens were obtained, including a lark. Two nights were spent at a point on Mount Victoria, 12,452 feet above the sea, and 670 feet below the summit of its highest peaks. The temperature here was, during the day, from 10 a.m. till 4 p.m., between 50° and 60° Fahr. in the shade; and on the tops of the highest peaks where exposed to the direct solar action, the temperature in the middle of the day was 70° Fahr.; and in the early morning, before reached by the rays of the sun, the surface of the ground was white with frost, and icicles more than an inch in diameter and 7 or 8 inches long were brought into camp. Excepting a slight haze at times, when a strong south-east wind was blowing, the sky in the daytime was blue and cloudless, and at night the mighty galaxy of stars shone with great brilliancy in the clear heavenly vault. The existing conditions of Mount Victoria and of all the most prominent features of the Owen Stanley Range indicated a dry region, and the impressive silence of the surroundings was not broken by even the trickling of rivulets nor the more mighty weird moaning sounds of the romantic waterfall and cataract. A series of six separate serratures or peaks projecting from a common base, the plane of which is one and a quarter mile long, extending from south-east to north-west with a slight curvature, the convexity of which lies to the north of a straight line joining the extremities, constitutes the crest of Mount Victoria. The extreme north-west and the south-east of these peaks, which are of equal height, and comparatively easy of ascent by great rifts in their rocky sides, are a few feet higher than those of intermediate position, which, being formed of nearly perpendicular and overhanging bare rough-surfaced rocky masses, especially the upper hundred feet of their sections, are exceedingly difficult of ascent. These peaks are separated from one another by chasms many feet deep, laborious to traverse; and their tops, which are composed of decomposed rocks, bedecked with beautiful flowering moss and heath, are from eight to ten yards broad, and from fifty to sixty yards long.

The eastern end of the Owen Stanley Range is not the culminative axis of an isolated pyramidal block, as described by previous observers from afar, nor yet does it possess a crowning eminence, the conformation of which in ordinary geographic or geometric phraseology could, with the smallest pretence to correct application of appropriate designation, be named a pyramidal block or pinnacle, although it is just possible that the conformation of a mountain crest, composed of many peaks, may be such as to make it appear one solid mass, when viewed from certain positions, and may actually be accepted and described as such by those of inexperience.

Mount Victoria is formed by the convergence and union of five huge rocky precipitous buttresses exceeding 12,000 feet in height, two of which are on the northern side, two on the southern side, and a giant one on the south-east side, all of which are bristling with grim peaks and inaccessible crags and precipices. The Owen Stanley Range continues unbroken from Mount Lilley in the north west for a distance of about thirty miles to Mount Victoria in the south-east, which is separated by a number of low rounded hills from the rugged mountainous country to the north-west of and in the neighbourhood of, Mount Obree. It will, therefore, be observed that to speak of Mount Obree as part of the Owen Stanley Range is just as incorrect and misleading as it is to speak of the pyramidal block or highest pinnacle of Mount Owen Stanley.

The views from the peaks of Mount Victoria, which were of the most romantic character, and the bold and clear panoramic and scenic outlines of the great physical conformation of the south-east section of New Guinea, from the southern to the northern coast, were of the greatest possible interest, and would have more than satisfied the utmost limits of the wildest imagination. Here the natural curvature and irregularities of the Owen Stanley Range were observed from the point of union with Mount Griffith on the south, and the bold, bare, rocky, treeless, serrated-topped Mount Scratchley on the north, to Mount Lilley on its extreme north-westerly termination.

Mount Scratchley, which is estimated at a height of 12,250 feet, and is, in consequence, the third mountain in the Possession, presents a bold rugged outline, with the upper 500 feet of its section composed of bare rocky masses, with a general trend in a north-east direction for three or four miles, where it is formed into two great offshoots which terminate opposite Mounts Gillies and Parkes. North from Mount Scratchley, and having a general trend in a similar direction, lies Mount Albert Edward, the second mountain in the Possession. This mountain, the height of which is estimated at 12,550 feet, possesses a partly bare and partly grass-covered rocky crown, with the upper 1,000 feet of its section destitute of timber, but only four or five miles of its crown were visible from Mount Victoria. Between Mount Victoria and the northern coast, which was plainly visible for several hours in the forenoon, only two great mountain masses are observed within the first quadrant of the circle. These mighty mountains, which are apparently separated from one another and from the Owen Stanley Range, were named Mounts Gillies and Parkes. They are from 7,000 to 8,000 feet in height, and the most western, Mount Gillies, presents a regularly shaped profile of from 15 to 20 miles long in a north-easterly direction, densely covered with an unbroken forest mantle, and separated from Mounts Scratchley and Albert Edward by a valley of a mile or two in width, and from Mount Parkes, east of it, by a river. Mount Parkes, which obtains a length of from 25 to 30 miles, assumes a longitudinal position similar to the direction of the Owen Stanley Range. In general physical appearance it resembles Mount Gillies, has no sharp, well-defined peaks, and is covered with forest. Between Mount Parkes on the north, and the ends of Mounts Scratchley and Douglas on the south, a valley two or three miles long widens out and disconnects the former from the end of the Mount Obree Range. This valley, which maintains an average breadth of four or five miles and a length of thirty miles, appeared to be thickly populated.

Although impossible to indicate the direction in which they ran, rivers could nevertheless be seen between the end of the Mount Obree Range and Mount Parkes, and between the latter and Mount Gillies, while far away easterly and southerly could be seen the bold outlines of other mountain ranges.

Viewed from the lofty summit of Mount Victoria, the general conformation of the territory on the northern side of the range appeared uniform and comparatively flat, and the population greater than on the southern watershed.

In so far as we have been able to prove, the geological structure of Mount Victoria is of the simplest kind indeed. From the top of the Owen Stanley Range to the mouth of the Vanapa no great varieties of order occur, so that, geologically speaking, the floor of the Vanapa basin differs little from its higher to its lower level Specimen rocks brought back indicated the existence of crystalline micaceous schist on Mount Victoria, diorite on Mounts Griffith and Knutsford, and the occurrence of traces of gold in the bed of the upper Vanapa, while in its other sections micaceous schists, hornblende, porphyry, and altered sandstone exist; but, as it is not yet known how much of these rocks are representatives of the districts in which they are found, it is, in consequence, merely an assumptive conclusion as to the actual geological conditions of that part of the country. Yellow sands containing gold also occur in the lower section of the Vanapa basin.

From the top of Mount Victoria peaks angular measurements were obtained and recorded of the prominent features of the landscape. On the top of the north-east peak Mr. Belford left a powder flask, containing a record of Sir William Macgregor's ascent of the mountain, on June 11th, 1889, and that he had given to it the name of Mount Victoria. On the top of the south-east peak Sir William drove the stick he had used for resting the compass on when observing, and on the morning of the 13th June the expedition commenced the return journey, following almost their outward track, the fragments of the expedition were collected, and the coast reached in twelve days.

Although great care was exercised, the expedition was unable to identify places on the Owen Stanley Range named and described by Mr. Forbes. Taking that into consideration, together with the substance of his description of the Owen Stanley Range, which, although referring to many prominent features upon which names have been bestowed by the author, shows no geographic positions by which alone identification is possible, we are reluctantly constrained to admit these names, which, if judiciously and appropriately applied to well-defined places, would have received full recognition. It is also regrettable that in describing other localities to which he assigns positions, that explorer has omitted to supply the interesting data employed in their determination, which, to the science of astronomy alone, would have, at least, been interesting, and possibly to future travellers useful.

L'Egypte et la Géographie.—Under this title the Khedivial Geographical Society has just issued a work by its secretary, Dr. Frederic Bonola Bey, on the explorations accomplished in Egypt under the auspices of the dynasty of Mohammed Ali. Originally prepared as a report to be laid before the International Congress held in Paris, in 1889, the work has been retouched, and augmented by a few notes and an appendix. As it stands, the record is honourable to the rulers of Egypt, and must be taken into account in passing judgment upon their history. The lines of exploration were practically laid down by Mohammed Ali's plans for the extension of his dominion, and, whether under his authority or that of his successors, the agents were, necessarily, for the most part, Europeans or Americans. Dr. Bonola has classified the work of each reign, and summed up, in four pages, the Egyptian contributions to geographical knowledge. These are, in part: The astronomical determination of positions in the Delta, on the Nile to the Albert Nyanza, in Nubia, Kordofan, Darfur, on the Red Sea, in Harrar, and on the Blue Nile; triangulations in the Delta, the Fayum, and Kordofan; measurement of a base line in the plain of the Pyramids; ascertainment of levels in the Delta and the Fayum, and on the Isthmus of Suez; astronomical and hypsometrical observations; reconnaissances and explorations in Arabia, in the deserts of Egypt and Nubia, in the western oases, to the east and to the west of the Nile, and along the river to the Victoria Nyanza, in Kordofan and Darfur, in the Harrar, and on the coasts of Somaliland; the topographical survey of the Nile from the Mediterranean to the Equator, and the mapping of all Egypt proper and many of the provinces; geological researches in every part of the country, from the Blue Nile to Syria; the creation of three cities—Port Saïd, Ismaïlia, and Khartum—vast improvements at Alexandria and at Suez, the establishment of lighthouses on the Mediterranean and the Red Seas, and the building of railroads; the establishment of a postal and telegraph service between Egypt and the Sudan. Dr. Bonola notes the interesting fact that the last official dispatch received from the post-office at Khartum bore the date of November 4, 1884. The Egyptian railroads have now, it appears, a total length of 1,194 miles.—*Bulletin of the American Geographical Society, September, 1890.*

THE ISLAND OF KADAVU.

By J. P. Thomson, F.R.S.G.S., &c., Hon. Secretary and Treasurer of the R.G.S.A., Brisbane, and communicated by him.

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The island of Kadavu, which constitutes the most southerly inhabited portion of the Fiji group of islands, situated in the South Pacific Ocean, is bounded between the parallels of 18° 55′ and 19° 10′ south latitude, and 177° 57′ and 178° 30′ east longitude, Its aggregate length is therefore about 33 miles, its greatest breadth about 7¾ miles. and its area about 131 square miles. Some fifteen years ago Kadavu, chiefly owing to its geographical position and the natural advantages it afforded, was considered an island of very great importance, as it is conveniently situated, and easily accessible to the great ocean highway between Australia and San Francisco, and formerly used by the steamers trading between these respective places as a port of call. It is therefore, irrespective of its natural capabilities, its peculiar and singular features, and its inhabitants, of considerable historical renown, and worthy of a place in the annals of geographical research. An admiration of its natural beauty, and a keen interest and belief in its future prosperity, if its natural resources are properly utilised, prompts me to place on record a detailed description, from personal observation obtained by my official survey and exploration of the island during the year 1884.

The island itself is almost entirely composed of an irregular and broken mountain chain, which extends in a SW. and NE. direction to the extreme ends of the island, and in many places its offshoots and escarpments on the NW. and SE. terminate in steep and rugged gradients to the very water's edge, where the seething billows of the ocean dash their silvery spray far above the level of its bosom. These escarpments are in places distorted by deep fissures, forming rifts and rills, in some respects somewhat resembling modified lunar landscapes. The anticlinal axes of the ridges formed by these distortions are usually occupied by huge masses of conglomerate and boulders of various shapes and of many sizes, ranging from that of the minimum to the maximum. These are evidently ejecta from craters of a bygone period, now extinct. These boulders, which are scattered over the whole of the island, exhibit indications of having passed through stages of change subject to the influence and control of the erosive action of water and atmospheric agency, while marine characteristics exhibit themselves in many of the conglomerate masses, even in those located on the crown of the ranges, also on the slopes of the mountains, notwithstanding their very considerable altitude, and their rugged and precipitous character. By reason of their steep declivity, no heavy deposits of soil can form on some of the mountains and leading ridges, by which cause the surface-soil crust is of no useful depth. This characteristic is especially developed on surfaces denuded of timber and scrub, and covered only with long coarse grass, surface-creeping vines, tall reeds, and, in some places, small patches of bracken. On surfaces covered with timber, even on the highest mountains, the soil is of far greater depth, and possesses higher productive substances. Here we are furnished with an illustration of the complexity of cause and effect, inasmuch as the product actually becomes the producer, as, forsooth, the trees and shrubs by their offshoots and close proximity to one another retain, while the augmentation and decay of vegetable deposit annually increase and nurture, the soil.

This diversification of forest and vegetation produces a pleasant and picturesque effect by their variegated contrast, and the light reeds and grasses, in blending their beautiful bright colours, infuse their surroundings with rich and rare tints of shade, which lend brightness to the sombre aspect of the dense forest and jungle. This especially applies to the north-west or lee half of the island. Although many features on Kadavu proper point to its prehistoric condition, to its eruptive or seismic origin, such as the existence of distributed igneous rocks, extinct craters, &c., yet the small island of Ono, adjacent to its northern shores, and separated therefrom only by a narrow strait, perhaps possesses the more recent and marked traces, as the island itself is practically a volcanic cone, containing on its north-eastern section one of the largest and most recent extinct craters in the group. Its exterior wall faces the ocean, and towering several hundred feet above the base, culminates in a rugged and precipitous razor-backed rim, which in several places is practically inaccessible, and accessible points are at places dangerous, owing to the scoriaceous formation, which makes a foot-hold insecure. When carrying out a survey in its neighbourhood, triangulation of the crater walls was necessary, as measurements by the steel-band were altogether impracticable. The external walls are in several places almost entirely denuded of vegetation, and where occurring, it consists wholly of dry bracken and coarse grass, neither of which constitutes food for domestic animals, excepting during the dry season for goats, which appear to favour the locality. Internally some short grass of a palatable nature, also numerous stunted trees, appear to flourish, although by no means luxuriantly. They, however, afford a relief to the dry, barren-looking, brown, external surroundings. The most prominent feature in the main Kadavu Range is at Tavuki Isthmus, where it is actually cleft in two, leaving the island so narrow and the surface of the ground so low that during stormy weather the sea washes right across from either side. This natural conformation, which the natives call Yarabali, is however largely utilised by natives and Europeans, who drag their canoes and boats across from one side of the island to the other. The task is a comparatively easy one, as the seasoned stems of the leaves of the coco-nut palms, which are smooth and fibrous, are always kept lying transversely on the track, so that once a vessel is placed upon them it is easily dragged along. Thus we are provided with a primitive, although very natural, means, which to native and European alike is a great boon, of transporting ships across the island of Kadavu. On the south side of Tavuki Isthmus is situated the island of Galoa, a small but very fertile island, which was used as a head depot during the years of 1873-74, and 1875-77, when the San Francisco mail steamers made Galoa Harbour their Fijian port of call. The first steamer arrived at Galoa on December 25, 1873, and continued to call for a period of ten months, at which time the company failed. During an interval of over a year Galoa was almost deserted, until the second line of steamers began to call in November, 1875, and continued without intermission to May, 1877. On the south end of the island of Galoa, and inshore on the mainland of Kadavu, there are two beacons, used at one time to guide the mariner to a safe anchorage; other traces of bygone civilisation are still to be seen, such as storehouses constructed of sawn timber and painted white, &c. In those days the village of Wailevu, situated immediately inshore, presented all the indications of the attractiveness of life of a favourite watering-place. People from all parts of the group used to wait here for the mail steamer, and on her arrival passengers would land at the village and make short excursions in the interior, while others would wait the arrival of vessels to transport them to other parts of the group. But now, alas! the glory of Wailevu has departed; the long rank grass and vine hide the ruins of former dwellings; the once flourishing flower-beds give place to the weeds; the uncultivated fruit trees yield their increase to the birds of the air; and only for the presence of Mr. Simpson, a native trader, and his European wife, desolation would everywhere appear. I doubt whether Wailevu will ever resume its former vitality, as the removal of the capital from Levuka to Suva places the latter place in a most favourable position as the most convenient port of call for any line of ocean-going steamers trading between the Australasian continent and San Francisco or any part of Europe, apart from its importance as the chief port of entry of the group—unless, indeed, the high lands of Kadavu are utilised as the sanatorium of Fiji, for which they are well suited, in the event of which Wailevu would doubtless command the largest share of patronage. I shall now proceed to describe the physical features of the island.

As before stated, nearly all of Kadavu is occupied by the main watershed range and its offshoots, which are very much disintegrated, so that the whole interior of the island assumes a somewhat distorted appearance. The slopes and sides of the mountains and ranges are cut up and disfigured by deep, and in some instances broad, fissures and ravines, the sides of which are in many places precipitous and rugged, which condition, in conjunction with the large masses of decapitated and disintegrated rocks, small boulders, and stones, which are nearly everywhere scattered over the surface, render the ascent of the mountain faces tedious and difficult. The principal mountains and leading heights of the island are Mount Washington (Bukù Levu) 2,750 feet above sea-level, situated at the extreme SW. end. It acts as a most prominent landmark, and its top, which is nearly always enshrouded in dense vapour, is the first land in the group sighted by vessels approaching Fiji from the southward. It is covered with timber, reeds, and dense scrub, from its base to the summit. The timber and shrubs on the top of the mountain are very much scattered and dwarfed, and exhibit no indication of the powerful development so prominently shown in the timber and vegetation growing on the lower slopes; and the surface of the summit is so boggy that a traveller will sink to the knees, a predominating feature characteristic of all the leading heights of the island. The exposed position of the summit renders all vegetation subject to almost perpetual envelopment in dense, cool, moist columns of vapour, and to the fury of all the high winds peculiar to the Western Pacific, which divest the trees and shrubs of their foliage, which falling upon the surface of the ground in large quantities, become decomposed. The decomposed mass, being almost entirely excluded from the action of the sun's rays, is in a continual state of fermentation; the gases produced thereby accumulate much faster than the conditions of the atmosphere permit it to evaporate, and the substratum is almost impervious, so that the moisture from the decomposed mass of vegetable matter and the rain water have no rapid means of escape, which conditions, combined with the foregoing, are sufficient to satisfactorily account for the boggy nature of the surface. Easterly and north-easterly from Mount Washington, the next heights, leading in consecutive order, are represented by Korotusara, 1,610ft.; Mount Moala, 1,643ft.; Mount Creak, 1,140ft.; Asses' Ears, 1,600ft.; Mount Challenger, 2,180ft.; Mounts Yale and Korolevu, 1,820ft. The whole cf the watershed range is, in Fijian parlance, designated Salevu-ni-Yalo, so named from spiritualistic belief—Yalo or Yalodra, spirit. According to the Fijian's belief in their idolatrous days, and I firmly believe up to this present date (1889), the spirits of the deceased when departed from the natural body were supposed to follow this range to its terminal point called Naigoro, at the extreme eastern end of the island, and from thence depart to their eternal home, some place outside the limits of our terraqueous globe or to the river Styx. There are no rivers in the island. The rain and natural waters are drained by numerous creeks, some of which are tidal and deep enough to float ordinary sailing boats. The coast line of Kadavu, which on all sides of the island is very broken and rugged, is on its south-east section protected from the heavy billows of the Pacific Ocean by a wall of coral extending from Tobanidavigele, at the extreme south-west end of the island, to D'Urville Channel, seventeen miles north from its north-east end, and called the Great Astrolabe Reef. In several places the proximity of this reef to the coast line renders inshore navigation by steamers and ocean-going vessels impossible, and boat navigation, which can only be practically undertaken at or near high water, intricate and in many places dangerous. This is particularly the case in the vicinity of Ucuna-garalevu, where the water is very shallow, and the careering tide, which resembles the rapids of a great river, dash inshore with angry fury and washes the rocks on the beach. The passes of Davigele, Yauravu, Galoa, Soso, Korolevu, and Naigaro, in the Great Barrier Reef, however, afford ample facilities for coastal navigation. The north-west coast of the island, although possessing the natural advantage of shelter from the prevailing south-east winds, is, however, less favourably circumstanced than the one just described with regard to protection from heavy seas, as in the absence of the Great Barrier Reef the coast is studded with a perfect labyrinth of detached coral patches, which, although in places close enough to one another to obstruct free navigation, are not sufficiently united to be of any practical utility as a breakwater. As before mentioned, about two miles north from the north-east end of Kadavu is situated the small island of Ono, which, like the former, is a series of hills, culminating in the centre of the island to an altitude of 1,160 feet. Although the soil on Ono is very rich and dry, yet there is no timber on its surface excepting small patches of stunted scrub trees. The whole of its surface is covered with large and small stone boulders, which render walking very obstructive and tedious.

SOIL.

The soil of Kadavu, although generally similar in substance to that of the other islands of the group, is somewhat different in distribution. The flat lands on the south-west section of the island are limited to small patches at the mouths of narrow valleys, and to narrow strips between the base of the mountain ranges and the sea-shore. These are composed of rich *débris* robbed from the mountain slopes by the annual tropical rains with which the whole of the group is so copiously supplied. The slightly tenacious nature of the crust on the mountain slopes, however, as compared with other parts of the group, renders it in a small degree somewhat impervious to heavy rain, and consequently the annual percentage of soil dislodged is largely minimised by local conditions. Portions of the available flats are utilised by the natives for banana, yam, coco-nut, sugar, and vegetable planting for their domestic wants, and the residue, although in every respect equal, and in many places superior to that cultivated, yields its substance to the nourishment of wild rank grass, shrubs, reeds, and other tropical vegetation, which, in Kadavu, in common with the adjacent islands, grow in profuse luxuriance. Here the wild flowering plants are in perpetual blossom, and the scarlet Hibiscus, after quaffing the refreshing nectar of heaven's nightly dew, rears its drooping head heavenwards in the early morn, and, as if it were performing an act of profound devotion, unfolds its broad deep red-tinted petals to the rising sun, to inhale fresh vigour from its life-giving rays. Shady groves and nooks are carpeted with the falling leaves of trees and the decayed flowers of the uncultivated shrubs, and their combined perfumes are so infused with the atmosphere that its inhalation produces an intoxicating influence over all sensitive individuals subject to its magic spell. Here we may stand face to face with Nature, and behold all her wealth of beauty transfused into one another; and as we wonder at all the simplicity of the beautiful graces with which all her handiwork is adorned, we may also observe the unfolding, as it were, of all the complex functions of living organisms exhibited in the luxuriance of her verdure. The soil contained in the north-east section of the island varies slightly in quality from and is somewhat differently distributed to that just described. The greatest extent of flat land is at Lawaki, Waiselima, and Korolevu at the extreme end of the island. The soil of these localities, although only comprised within flats of a very limited extent, is of a rich compound of alluvium *débris* containing a large percentage of phosphates, and highly suitable for the production of marvellous crops of all kinds of tropical and semi-tropical produce, as evidenced by an analysis of the soil itself, and indelibly proved by an inspection of the native plantations. The south-east slopes, which are entirely unutilised, are crusted with a marvellously rich prolific soil annually enriched by the profuse decaying vegetation and the deposits of moist vapour intercepted by the high background ranges. All along the seashore on both sides of the island, at the heads of the numerous bays and inlets, especially between Garalevu and Matasa, there are numerous patches of flat land composed of the *débris* carried down by the agency of water from the high lands These flats are mostly used by the native population for their villages and plantations, and they are also generally planted with flourishing groves of the beautiful coco-nut palm, of which more anon. In accordance with unalterable and well-known natural laws, also in harmonious accord with the conditions existing throughout the group, the south-east slopes of Kadavu are more productive of vegetation than the opposite or sheltered side, although it is not everywhere uniform, as may easily be understood through the irregular distribution of the soil. There are altogether about forty European land claims in Kadavu, containing areas varying from 1 acre to 400 acres ; but, unfortunately, out of the whole of the claimants there are only three who make the island their home, namely, Messrs. Simpson, a trader, Blacklock, boat-builder, and Sassen, also a boat-builder and trader, all three of whom are very old residents of Kadavu.* This minimum European population is a source for much regret, as the natural and artificial capabilities of the island are not made use of, progress in commerce and agriculture is stagnated, many broad acres of the most fertile land, which could make many poor families happy and afford prosperous and flourishing homes for many, are waste and desolate, and social progress, if not altogether degenerative, is greatly retarded.

FLORA.

Of all fruit-bearing palms and trees the coco-nut palm is, in my opinion, preeminent to all others. Its utility is unrivalled, and probably unlimited. On comparatively barren rocky islets and on treacherous low-lying shores its distinctive, majestic head towering over, and so markedly and unmistakably dissimilar to all other vegetation, is a beacon to the mariner ; in torrid climes, where it attains the zenith of its glory, it is unsurpassed by all other landmarks ; and on many a lonely spot faithfully and well warns the sea-king of dangerous shores. The fibrous and tenacious nature of its timber renders it celebrated for special purposes in the building of native ships of war, houses, &c., while its other component parts, the feather-like leaves for mats, thatch, baskets, sails, &c., the core of the palm for salad, the fibre of the husk for ropes, mats, nails, &c., and the nut itself for food, drink, milk, toddy, oil, spoons, bowls, and other utensils, &c., are renowned. In consideration of the importance of the foregoing conditions, also with a view to instruct many who never have and probably never will see the palm, also those who have seen and learned not, I propose to give a detailed description of this graceful and truly wonderful palm.

Some writers appear to doubt the possibility of a self-planted coco-nut palm, but, to me, the question of possibility or probability has never for one moment caused a conflicting thought. From personal observation, apart from consideration of the natural laws affecting the germ of plant life, I have no hesitation in saying that, under favourable and congenial conditions of clime and soil, the coco-nut will, unaided, save by natural process, take firm hold of the soil and develope into a graceful palm. Those familiar with the natural conditions of the coco-nut palm, and who are also original thinkers, accustomed to form conclusions from truly logical reasoning, and to accept deductions from a true reconciliation of cause and effect, cannot doubt my authority. The coco-nut palm springs from the germination of a vital substance contained within the strong walls of a large spherical nut-shell composed of an exceedingly hard combustible substance, brought about by the consolidation of certain fibre-yielding substances, produced by the development of the nut. This shell is covered with a thick husk of strong fibre, and the whole intact nut, of which there are at least six different varieties in the Western Pacific, all slightly dissimilar from one another, and all which are not by any means triangular in shape, as described in the "Encyclopædia Britannica," when placed either by hand or by accident on the surface of, or some inches below, fertile soil, shoots out numerous roots from the husk, and the seed germinates from within, forcing a long thin sprout of leaf through the fibrous casing; the whole embryo thus conceived continues, like all the first beginnings of nature, to develop, until after the lapse of many years the graceful head of the palm is raised far above the surface. The coco-nut palm, which is slow in developing, yields its first crop of fully-developed nuts about the seventh year of its age, and continues from that period of its existence to ripe old age to yield a yearly increase. In some favourable localities some varieties of coco-nut palms will bear fruit in the fifth and sixth years of their age, but in every such case brought under my notice the nuts were imperfectly developed.

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* A Wesleyan missionary also resides on the island.

During the first season of the year, the shell of the nut, which at this stage is of a whitish colour, is thin and somewhat flexible, and contains about a pint measure of the most delicious liquid, in colour somewhat resembling ginger-beer, of a slightly sweetish and most agreeable and satisfying taste, peculiar to itself—erroneously called milk. Its interior walls are lined with a whitish fleshy substance, first formed by the cohesion of glutinous matter to the walls, quite thin, tenacious, and soft enough to be easily removed from the shell by the application of a slight pressure of the thumb, or by an ordinary dessert spoon. It is only when at this particular stage of development that the liquid is perfect and wholesome to drink, and the kernel nutritious and palatable for man to eat. From this stage, when the shell has obtained its maximum internal capacity, the kernel gradually consolidates, and growing rapidly in thickness, absorbs the encompassed liquid, which rapidly changes into a slightly tart consistency, with a tendency to effervescence—it is only when at this particular stage that an over indulgence will probably produce an irritating effect on the urinary organs—and gradually diminishing in quantity eventually becomes altogether absorbed, leaving only a small, round, yellowish spongy substance about the size of a hen's egg. At this stage the whole sap contained in the external husk has altogether disappeared, leaving only the dry fibre, which gives the nut an appearance of old age, such as may be seen in market places, and on board homeward-bound ships from tropical countries. The kernel has attained its greatest possible development, and is white, thick, hard, and ridgy—the coco-nut of commerce as sold by confectioners and street-vendors in Great Britain and elsewhere. It is from the fully or partially matured kernel that the real coco-nut milk is obtained. The natives grate the kernel into a coarse powder by means of a rectangular dentrictic piece of iron, fixed into the end of a bar of wood, which rests on a fulcrum, and kept firmly in position by the weight of the operator, who, with a half of the coco-nut shell, containing half the kernel, placed in the palm of his hand, and the scraper projecting from his fork, grates up the whole of the kernel. After this primitive operation, the powder is sprinkled over with water, and a large, smooth, spherical red-hot stone is laid on and rolled over the whole mass, which, being promptly and dexterously strained, yields the true milk of the coco-nut. This milk is white, about the same consistency as cream, and containing a percentage of oily matter. It is agreeably sweet, and is commonly used with porridge. I have also used it with tea and coffee, and have found it to answer as a very good substitute for cow's milk. The kernel, when thus fully matured, is also removed from the shell, cut up into three or four pieces, dried on a "bather" in the sun, and exported as copra, at the rate of about from £10 per ton, from which the famous coco nut oil is extracted. The period of drying, which of course is regulated by the condition of the atmosphere, occupies about three or four days, at the end of which time the kernel has lost about half its original weight. Each tree yields about 150 nuts annually, of which 4,000 are required to make a ton of copra. The shell, which makes good fuel, is used for drinking-vessels and for culinary purposes. The fibre of the husk, known as coir, is used by the natives for an almost unlimited variety of purposes, and with Europeans its uses are of course well known. The wood of the palm, being fibrous, is, when newly cut, quite flexible. It is justly prized by the Fijians, who use it for the woodwork of their houses, and for numerous other purposes.

The bread-fruit is grown abundantly in Kadavu, on the fertile flats skirting the seashore; also in the valleys the tree flourishes, and the fruit attains its greatest degree of development. Apart from its food-producing qualities, the tree possesses many properties of economic value. It yields a glutinous substance of a somewhat light colour, which, upon exposure to the atmosphere, consolidates, and assumes such powerful tenacious properties that the application of its substance is largely used for the cementing of the planks of canoes and other vessels requiring the application of a binding substance. The inner casing-leaves of the pods are also used as a substitute for fine sand-paper, especially in polishing trinkets made of the tortoise-shell, for which use it is justly valued. The fruit of the tree is cooked, either by boiling, roasting, or by baking in the earthen and stone oven, and afterwards prepared in various ways for food, being sometimes pounded up with the coco-nut milk, made into a delicious pudding, and otherwise eaten in its pure state, either form of which is excellent.

Many varieties of esculents are grown and cultivated by the native lords of the soil. Of these, the taro (*Colocasia antiquorum*), of which there are two varieties, the wet and the dry, is said to possess the more powerful nutritious substances for human food. It is cooked by the same process as the bread-fruit, and eaten in similarly prepared forms. The leaf, which, when fully developed, is amongst the most perfect in symmetry and beauty in the vegetable kingdom, also the most useful, is in shape somewhat after the form of the heart of a large animal. To the touch, and in external appearance, it resembles a velvety substance. It is utilised by the natives for drinking and water-carrying purposes, and for such uses it is much preferable to the manufactured European article. When boiled and mashed up with butter it forms one of the most wholesome and delicious table vegetables—spinage. It acts on the liver, and its periodical use will insure perfect regularity of and act as a stimulant to the digestive organisation. I strongly recommend its use to dyspeptic subjects, and to new arrivals in the colony. Its native name is *dalo*. Tobacco and yagona (*Piper methysticum*) are cultivated, but, excepting several varieties of bananas, the natives show no special desire to plant fruit. They appear quite content with Nature's offerings. Several varieties of oranges, mangoes, custard-apples, lemons, limes, and pine-apples grow in a practically wild state. They might at one time have been planted, but their development and nourishment are now left entirely to Nature's control and care amongst the opulence of her offspring in the wilds of the forest. The shady bowers of the forest glens are overhanging and adorned with the branches and foliage of the orange trees. Of these there are the very large granulated, coarse-grained, thick-skinned variety, about six inches in diameter, the bitter variety used for preserves, and several of the sweet-eating varieties, whose skins contain a superabundance of the usual oily substance peculiar to the skins of oranges, which in Fiji retards and prevents them from properly maturing. The surface of the ground is thickly covered with the fallen oranges, and the whole surrounding atmosphere infused with their delicious perfume, which appears to steal upon the senses, so that those subject to its influence are intoxicated with the enthralling gentle breezes of the forest recesses, and become lost in admiration of Nature's exhaustless wealth and munificence.

The ivi tree, or Polynesian chestnut (*Inocarpus edulis*), also flourishes in Kadavu, where its economic properties and umbrageous nature are rightly prized. It is when exposed to the fierce rays of the torrid sun that its cool shade is to white and black alike hailed with joy. The nut, which is enclosed in a hard, thick, strong, fibrous casing, is of an oval shape, and when boiled it is an agreeable and palatable food. In times when cultivated food is scarce, the natives are dependent largely upon the ivi nut for sustenance.

Crotons, hibiscus, several varieties of wild flowers, and many ornamental shrubs grow in wild profusion over many parts of the island. The forest, although much scattered in patches, and inextensive in magnitude, produces the largest trees in the Fiji group, whose timbers, for local ship, boat, and house building purposes, are highly valued. Several varieties are also well suited for cabinet-making purposes, especially the vesi (*Afzelia bijuga*) and dilo (*Calophyllum inophyllum*). Their timbers are close-grained, and take a fine polish. For ship and boat building purposes the following timber trees are the best: dakua (*Dammara vitiensis*), vivi (*Serianthes myriadenia*), damanu (*Calophyllum burmanni*), also the vesi and the dilo.

Of domestic animals, there is the pig, the goat, the dog, and the cat. The feathered family is represented by the fowl, the turkey, and the duck, also several varieties of pigeons ; parrots, hawks, owls, and a number of small birds of the most beautiful and brilliant plumage, abound in the shades of the forest. Beautiful butterflies, moths, beetles, flies, and numerous other insects of various shapes, shades, and sizes, are at home in the cover of the island verdure. The rat and flying-fox are perhaps the only animals indigenous to Fiji. The small number of snakes inhabiting the branches of the forest trees are of a non-venomous kind. They are small in size, and at all times appear in a torpid state.

Fresh-water prawns and eels are plentiful in the creeks, and several varieties of land-crabs are common. The sea-shore and reefs abound in shell-fish of various description, and plentiful supplies of scaled fishes are caught by nets in the shallow waters of the barrier and fringing reef. Tortoises are also caught, their flesh eaten by the native aristocracy, and their shell used for ornamental and commercial purposes.

NATIVES.

The native population of Kadavu numbers about 7,500, who live in separate towns or villages, in different districts. According to constitutional laws and usages, each district is subject to its deputy chief, called Buli, and surnamed after the district to which he belongs, who again in turn is responsible to the provincial chief, whose official title is Roko, and who, as recognised head, is their official representative to the State, also their hereditary representative in the native Parliament. This Roko, who is only appointed by the Crown, receives a salary from the State, and is allowed an official secretary, who is designated Vunivola. The reigning Roko, who is far advanced in years, is without teeth, and quite blind. When enjoying the hospitality of his court, nothing used to delight me more than waiting upon him in the morning with a cup of coffee, and even holding the cup to his mouth ; and I am almost sure our affection was mutual. He was kind and obliging, and possessed all the qualities of a noble mind and of a good ruler, with gentleness in his manner, and resolution in all his actions. His native name is Qara-ni-Valu, literally interpreted Cave-of-war, a name which in every respect appears from his early history to have been quite applicable, as he possesses a giant frame, and the history of his early exploits in warfare is quite thrilling, even to the modern mind. The natives of Kadavu are, in common with their neighbours of the adjacent islands, a physically strong and healthy people. A few suffer from ophthalmia, ringworm, and elephantiasis, and a few cases of phthisis may occasionally be met with, but this is by no means common. They are somewhat light in colour, with immense broad chests, fine arms, and beautifully-formed limbs, bright eyes, and although generally somewhat broad, the features are often intelligent. They are, as a rule, vivacious, kind, obliging, courteous, and hospitable. They are not over-sensitive subjects, consequently slow to take offence, and so, unlike their European brethren, they rarely lose mental control. This latter characteristic is a distinctive feature in their temperament. In social discussions, at State and public assemblages, and at legal tribunals, they exhibit superior tact to the average European by their cool and collected utterances. The plebeian and the king are alike gifted in oratory. Stammering and stuttering in public speech are unknown to them. They are born elocutionists and accomplished rhetoricians. Their reasoning faculties are moderately good, and their social organs are generally most harmoniously arranged. They have keen perceptive faculties, and are good at natural design. They are good at imitation, remarkably clever caricaturists, and natural cynics. They laugh at their white-skinned brethren for their characteristic accomplishments, which have become proverbial, in readily losing mental control. When in that condition they are dubbed "fools." They have a keen sense of justice, and discourage acts of dishonour. They are keen traders, and like to obtain full value for their goods. Charity in its pure and broader aspect, when uncontaminated by European intercourse, reigns in its natural state in their midst, and with them it begins at home. Hospitality is one of the characteristics of the Kadavu natives: it makes itself felt, and extends in every direction. In their villages, amongst themselves, to neighbouring villages, to strangers of their own class, and to all classes and conditions of Europeans the frugal board of hospitality is freely spread. Tardiness with food is absolutely foreign to their nature. One of their chief aims in life is to provide an abundant supply of food for their wants, and, as they give liberally to others, so, too, they expect, when required, liberality in return. The nature of my official duties necessitated an almost continuous intercourse with the natives of Kadavu and other parts of Fiji. I have camped for many months continuously in their midst ; I have for years eaten of their products ; it is therefore with much assurance and the fullest confidence that I pronounce them amongst the most hospitable, liberal, and charitable race of people upon the earth. European hospitality and charity at any time is mythical, but when placed in contrast with that of the Fijian it sinks into insignificance.

Petty quarrelling, jealousy, division, and dissension are uncommon to them. They religiously observe their social laws and usages, and the slightest infringement thereof insures prompt and adequate punishment to the offender. Under the old native tribal *régime* the punishment usually inflicted upon delinquents was torture, degradation, and death.

They are a servile people, and loyalty to their chief is a prevailing feature in their character. In all things, and at all times, his commands are law, and formerly the sacrifice of life in their execution was considered honourable and heroic. Human sacrifice on State and festive occasions was one of the clauses in their social code. Whenever the death of a chief or prince occurred, young and handsome women, gaily attired in gorgeous native robes, would voluntarily present themselves at the obsequies, and demand to be buried alive, as an illustration of devotion to the departed one. Likewise, at the building of a chief's or other important house, when the pit was dug ready to receive the central supporting pillar of the house, two or three men also gaily attired would deliberately jump into it, and with due solemnity allow the pillar to be lowered, and the earth filled in upon their living forms. This, with the launching of war-canoes over the prostrate bodies of living men, was a common, and to them necessary, method of human sacrifice. Strangulation of the sick and maimed was formerly the customary practice amongst the Kadavu tribe. Although far behind the times in modern advancement, they were nevertheless several steps ahead of it in logical ideas, as they practically believed in the survival of the fittest.

Based upon and in accordance with natural laws, their social organisations are elaborate and apparently perfect. It is when attempting to incorporate the native social and moral laws with that of a foreign civilised nation that friction and complications arise. Left in the enjoyment of their social usages and rights, the natives of a country will thrive ; take that away from them, and make them amenable and subservient to that of civilisation, and they will surely degenerate. They possess a parliament and a court of law, both of which are presided over by ministers and magistrates of their own class, before whom all disputes and grievances must be dealt with. They have a gaol in the capital, and every village possesses its officer of the law in the person of police-constable, the number of each village being proportional to its population. They have churches, state and mission schools in charge of native teachers, where the youths receive education and religious instruction. They hold devotional service on Sundays and on some of the week-days, and never neglect evening and occasionally have morning prayers in their houses. The former is usually offered just before retiring for the night. They pray apparently earnestly and aloud, with marvellous fluency. In the native teacher's house the evening and morning prayers are usually preceded by the singing of a hymn or psalm, the incantation of which sounds most melodious from a short distance. Music is taught in the schools, more especially in those attached to the Roman Catholic mission stations, and presided over by those devoted self-sacrificing and learned French priests, of which the stations situated at Levuka and Bureta, Ovalau, supply worthy representatives.

No companionship appears to exist betwixt man and wife. She is generally the slave of her lord, and apparently she has no ambition to improve her state. Her work usually consists of fishing, mat, cloth, and pottery making, plantation weeding, the procuring of firewood, the carrying, cooking, and serving of food, the whole of the household duties, the dramatic entertainment of the men, and numerous other minor and auxiliary labours. The young women are pleasant, graceful, kind, vivacious, and possess many natural endearing charms, and imperfect development is of rare occurrence amongst them. Maidens are always readily distinguished by a few long narrow plaits of hair hanging down the side of their heads. When they become wives these maidenly ornaments are cut off. They marry according to English marriage law, and the application of the law of divorce is as rare as it is novel. Infidelity and immoral practices are extremely rare amongst the female section of the Kadavu community. In this respect their characters are truly worthy of emulation. Their dwelling-houses, which are neatly built of timber, reeds, and thatch, are sometimes beautifully ornamented internally with designs wrought in coloured sennit made from the coco-nut fibre. The floors are covered with beautifully wrought mats; and when well built and finished a Fijian house is the most cool and comfortable that can be constructed to meet the requirements of a tropical climate. The larger and more important houses are built upon foundations of from 2ft. to 10ft. in height, constructed of stone and coral, and are usually approached at the main entrance by means of a massive plank of hard wood placed at an angle, the inclination of which is governed by the height of the foundation, and the length of itself, with footsteps hewn out of the solid wood. This plank, needless to say, is more easily traversed by the barefooted natives than by the booted whites. Houses of this class are usually thatched on the roof with the leaf of the sugar-cane, which lasts for many years, and whose durability is unsurpassed for this special purpose. The interior front section is occupied by one or more square fire-places, and the extreme end by an elevated daïs composed of dried vegetation, and covered with mats, the whole imposing structure forming a huge bed, the height and area of which depend upon the importance of its owner. The Kadavuans are thorough practical agriculturists, and their importance as food-producers is fully recognised by all classes of colonists, who are dependent almost altogether upon the yield of their harvest for vegetable food. They pay their taxes in kind, and their plantations produce, in addition to that required for their own use, sufficient for the consumption of a considerable export trade to European centres in different parts of the group. They plant tobacco, sugar-cane, maize, cotton, kava (*Piper methysticum*), yams, several varieties of sweet potatoes, pumpkins, arrowroot, beans, taro, &c. They are expert irrigationists, and its value in enriching and improving land has long been known to them. Their agricultural land may be divided into two classes—alluvium flats and hillside slopes. Plantations on the former are in all cases bounded by natural boundaries, and subdivided artificially into sections of uniform areas representing individual shares. That these artificial division marks may consist of stones, mud-dykes, furrows, or stakes will altogether depend upon natural conditions and individual peculiarities. Natural boundaries are usually creeks and rivulets whose waters, being ever permanent, are conducted to the cultivated subdivisions by artificial channels and wooden troughs. Hillside plantations are usually terraced and irrigated by the waters of neighbouring creeks gravitated thither, sometimes from considerable distances, through bamboos and artificial races. Although both classes of plantations show great agricultural method and skill, the latter presents greater artistic features, and when well executed it is somewhat picturesque. The utilisation of astronomy as handmaiden to agriculture was, even from the earliest ages of the colony, fully recognised. That the heavenly bodies were methodically observed by the Kadavuans is clearly exemplified by their application of stellar cyclic periods to the regulation of the seasons. Even now, notwithstanding the advantages of civilisation, the times for sowing and for reaping are generally indicated by the apparent positions of the constellations, that of the Pleiades (*Vrusa*), Crucis (*Na Iri*), and Orion (*Na Ga*), being prominent.

Although cannibalism, practised within narrow and contracted limits, no doubt existed, its dramatic and awe-inspiring history, for which European missionaries are largely responsible, is obviously grossly exaggerated, and calculated to inflict grievous injury upon the natives and their possessions. Delinquents were sometimes punished by death. They were usually attired in fantastical native garments, bound hand and foot, and placed uncomfortably close to the edge of the oven (*lovo*) where they were compelled to watch the process of heating and preparing it for their reception. When the stones forming the lining of the oven became red hot, the unfortunate victims, who during the process were scorched by the intensity of its heat, were dealt a terrible and fatal blow on the back of the head with a club, and pitched into the yawning oven! The religion is Protestant and Roman Catholic; and although apparently devout worshippers, I am, from close observation of actions and numerous confessions, constrained to believe they do not yet understand modern Christianity from the national standpoint. They listen attentively to the promulgation of religious doctrine, but they are unable to grasp its substance, and unwilling to believe Scriptural texts.

Mr. W. L. Allardyce, who represents the Government as stipendiary magistrate and native tax-collector, pays periodical visits to the island. Mr. Allardyce is always ready to render personal assistance and supply information, and his services were sometimes valuable to me in recording the time when engaged conducting my astronomical observations, especially in my observation of the total eclipse of the moon on 10th April, 1884; also those necessary for geodetic and trigonometrical operations. It is therefore with much pleasure that I associate his name with that interesting work.

CLIMATE.

From a climatic point of view Kadavu occupies the enviable position of the Fiji group. Its high lands and general physical conditions, combined with its geographical position, are favourable to moderate and uniform range of temperature, which combination of causes tends to produce favourable climatic effects conducive to healthy conditions in their various aspects. Considered as essentially tropical, the climate of Kadavu is almost perfect. Tempered by the cool south-east trade-winds, from the beginning of April till the end of November the atmosphere is cool and enjoyable on the lower localities, while its condition on the high lands is manifestly cool, refreshing, and bracing. The climate is dry, and notwithstanding the usual periodical wet season so common in the tropics, that to which Kadavu is subjected is mild and of short duration. Thus it follows that the sum of the foregoing conditions, when combined with its beautiful, picturesque natural scenery, provides all the requirements necessary to render Kadavu congenial to the life and well-being of mankind. Other conditions being equal, I would scarcely wish a more charming place in which to pass my life. The absence of systematic meteorological observations for a useful and reliable period preclude the supply of indicated measurements. In conclusion, may I be permitted to add, that if the many months of solitude and hardships, not unaccompanied by actual mental and physical pain, devoted to survey and scientific exploration in Kadavu, tend to promote the laudable objects of your Society, in however small a degree, I shall consider my labours amply repaid.

This paper was also sent to the Royal Scottish Geographical Society and printed in December, 1889 (with a capital map of the island), in the *Scottish Geographical Magazine.*

The Merv Oasis.—After the annexation of Merv, a part of that territory, comprising about 386 square miles, was formed into a private estate for the Emperor of Russia. It lies twenty-eight miles from the town of Merv and near the railway station of Baïram-Ali. About forty miles from this station an immense dam has nearly been completed to check the waters of the Murgab, which will be used for the irrigation of the property. Next spring, when the irrigation canals have been constructed, a fifth of the estate will be colonised. For this purpose Mohammedan settlers from Ferghana will be chosen, these being best able to endure the dry and hot climate of the Merv oasis, where the thermometer often stands in summer as high as 112° to 120° F.—*Deutsche Rundschau* Bd. xii. Heft 11.

RHINS OF GALLOWAY: A COLONIAL COMPARISON.

By Mr. W. G. BLACK, F.R.C.S.E., F.R.M.S.

[Read to the Members in the Library, Tuesday, July 22nd, 1890.]

Since visiting several localties in the neighbourhood of Stranraer, I have been impressed with the idea of the similarity of this part of Wigtonshire in physical conformation to that of the Cape district in South Africa.

At the south-west extremity of Scotland there is a peninsula with two points directed north and south, and a face directed west, and separating the Rhins of Galloway from the mainland are two bays looking north and south, and an intervening isthmus on which lies the town of Stranraer. How much the same condition of things is found at the Cape, as may be seen by referring to any map of South Africa.

There are two bays—north, Table Bay, and south, False Bay, with an isthmus between them, the Cape Flats, on one corner of which lies Cape Town. The peninsula has a north point called Green Point, and a south point called Cape Point, and a face looking west with a rocky coast, much like the Galloway peninsula about Port Patrick. This tract again has a northern end at Kirkholm Point, and a southern at the Mull of Galloway, all high land and rocky. The main coast line tends north in Galloway to Ayrshire, and also north in the Cape to Malmesbury, and the south coast line in Wigtonshire goes east to Kirkcudbright, and in the Cape east to Swellendam.

The similarity is further borne out by the high ranges of mountains, the Hottentot Hollands at the Cape on the mainland, and by the Benerard and others of the Braid Fell range here in the Luce district of Galloway. The only, and a great difference consists in the absence of a Table Mountain Range in Galloway on the Rhins, but there are some low hills to represent it, Craighead and Bannore. The geological features also seem analogous, as there are silurian strata in both as the bed rock all over, with granite showing here and there, at the Cape, and basalt in Galloway instead. Here again we come across the real feature which accentuates the geological difference between the two, and causes the absence of a table mountain in Galloway. This seems to be due to denudation of the carboniferous strata from Galloway, which exists only in a semilunar patch at the west coast of Loch Ryan, and there is none left to form a mountain.

At the Cape the secondary horizontal carboniferous sandstones remain in that range to form Table Mountain, though they are denuded from the Cape flats as in Galloway in the Luce flats.

Finally, the analogy between the two may be carried into an examination of the causes of the present physical conformation of the district. It is likely that both Table Bay and Loch Ryan were formed by irruptions of the sea by north-west storms breaking down the rocky barriers that crossed their mouths, and washing in upon the lower country behind them to the south-east. The remains of these barriers are to be distinguished in Robben Island, at the Cape, and the Scaur at Loch Ryan. Luce Bay, on the other hand, as well as False Bay, were probably denuded estuaries of former rivers that ran through their middles to the south, which have been widened out right and left by south-west and south-east gales into open bays.

Under this idea the Luce and Piltanton and other small brooklets were feeders of a larger river in the middle of Luce Bay that ran towards the rocky islets at the mouth. In the same way at the Cape the streams from the Hottentot Holland Mountains, the Erste river, and that at Somerset West, poured their contents into a larger river that ran out down the middle of False Bay. The barenness of the silurian strata all over Galloway shows the paucity of deposition of rock strata aftewards, and only a long patch of carboniferous is found along the west coast of Loch Ryan at the present day. This may, however, be representative of these strata that filled up the hollow between the Luce and Leswalt ranges of hills east and west of Stranraer. The rest of it south over the Stoneykirk Flats and Luce Bay have been swept away, as it has been over the Cape Flats and False Bay.

The analogy between the two districts may be still further extended by considering the modern appropriation of each by towns and harbours and properties which, however, are only the decorations of topography. Cape Town and Stranraer are very comparable in being ports and railway termini, and similarly situated at the south-west end of their respective bays. Port Patrick again can be compared to Hovet's Bay on the Cape, as both are used for fishing purposes, and both are much exposed to storms from the south-west. Glen Luce in many ways may be considered another Stellenbosch, called colloquially Sleepy Hollow, as both recline in shady valleys, and both are somewhat literary and bucolic in life and pursuits· The village of Sandheads looks like Muysenberg, and Chapel Rossan seems a suitable Kalk Bay in miniature and prospects, and nothing can be better assimilated than Dunmore in the one place and Simon's Bay in the other as small harbours. And as to properties, who would not at once pitch upon the mansions of Ardwell House and Logan House as representatives of the two Constantias, of the Cloetes, and Van Reenan, at Tynberg? The Grand Seigneur in each will be the Lochnau Castle with Sir Andrew Agnew, and Newlands associated with the residence of the Governor of the Cape.

Lastly, on the other side of the bay we may venture to associate the Hays of Dunragett with the Maskells of Morgenstein, at Somerset West. The tracts of railways are also on very similar lines, and the one wanting to complete the system is the proposed one from Stranraer to Dunumore, to be compared to that from Cape Town to Simon's Bay, and the termini are at Cape Town and Stranraer.

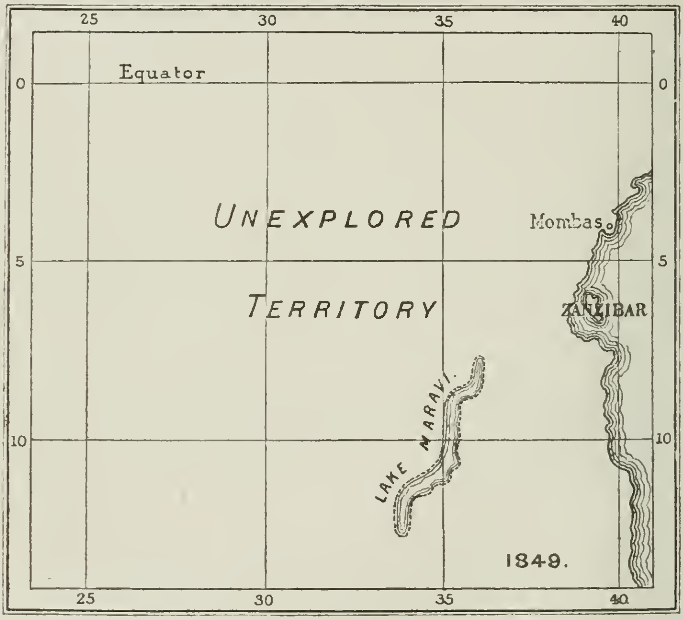
Air Currents Above Us.—Mr. F. Galton, in some recent remarks on the importance of observing the upper currents of the air, said that the great thing we now want to know is the state of the air above us; for we are at the bottom of an aerial ocean, and all we know is what takes place at the bottom. Imagine how little a marine animal that lived at the bottom of the sea, having the same intelligence as ourselves, would know of the currents above. That is precisely our position. We understand only one horizontal section of this superincumbent mass. Captain H. Toynbee, of England, commenting on Mr. Galton's remarks, observed that it seems possible that cheap balloons may be used to advantage where upper clouds are not seen, He thinks this is proved by the adventure of an aeronaut who went to Madras a while ago and advertised an ascent, fixing the hour when the sea breeze had set in, with the object of being driven over the land. There were no upper clouds to show the motion of the upper currents of air. Mr. Bayley, of the Revenue Board of Madras, feared that there might be an upper current of air which would take the man out to sea. He took his glass and watched the balloon from his office window. At first, in the lower stratum of air, the balloon drifted quickly to the westward over the land; but soon, giving a peculiar twist, it moved seaward so quickly that although the man pulled the string of the valve, allowing the gas to escape very freely, he fell into the sea two or three miles from the land. Boats in the harbour hurried out and saved him.—*Goldthwaite's Geographical Magazine, April, 1891.*

THE LAKES OF EASTERN CENTRAL AFRICA.

By Mr. J. HOWARD REED.—(*See Maps.*)*

Addressed to the Members in the Library, Tuesday, July 22, 1890.]

At the present time the geography of Central Africa is continually under discussion. This is, of course, largely due to the recent remarkable expedition of our distinguished member, Mr. H. M. Stanley, for the relief and rescue of Emin Pasha, so gallantly and successfully carried out by the great traveller and his brave companions. We find also a grand scramble, for African territory, taking place among the states of Europe, in which, each power is doing its best to become the recognized master of certain enormous tracts of country. At such a time it may be of interest to the members of the Manchester Geographical Society to consider briefly, concisely, and graphically the development of our knowledge, during the last forty years, of one of the most important geographical features of the "dark continent," viz., the Lakes of Eastern Central Africa.



No. 1.—Map of Eastern Equatorial Africa in 1849.

There appears to be little doubt that the ancients had more or less knowledge of the existence of lakes in the centre of the continent of Africa. We find that Ptolemy, who lived and wrote in the second century, especially refers to them.

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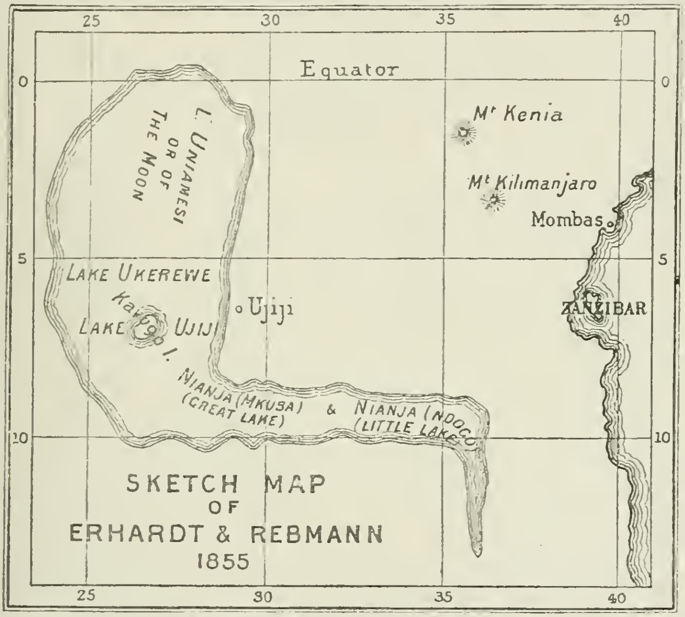
* The maps to illustrate this paper are kindly lent by the Editor of the *Primrose League Gazette* (see paper therein, June 28, 1890).

The geographical writers of the middle ages, and of the sixteenth, seventeenth, and eighteenth centuries, doubtless knew something of the lakes; and in the maps of each period, lakes, of varying size and shape, are to be found scattered over the continent in various positions.

It is remarkable, that in the maps referred to, the physical features situated on the immediate coast-line are pretty accurately fixed, clearly showing them to have been laid down by men having considerable astronomical knowledge, such as we should expect to find among the navigators of those days. The physical features of the interior, shown in the same maps, we find, however, anything but correctly shaped or fixed, when viewed in the light of our own more exact knowledge of to-day. This shows clearly that they were known to the map makers of the time merely by report. Arab, native, and Portuguese half-caste traders, travelling to the interior, would, we can well understand, know of lakes, rivers, and mountains, which they would see and traverse in their journeys. They would, however, be quite incapable of accurately fixing their latitude and longitude, or correctly delineating their size and shape.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30
35
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Equator
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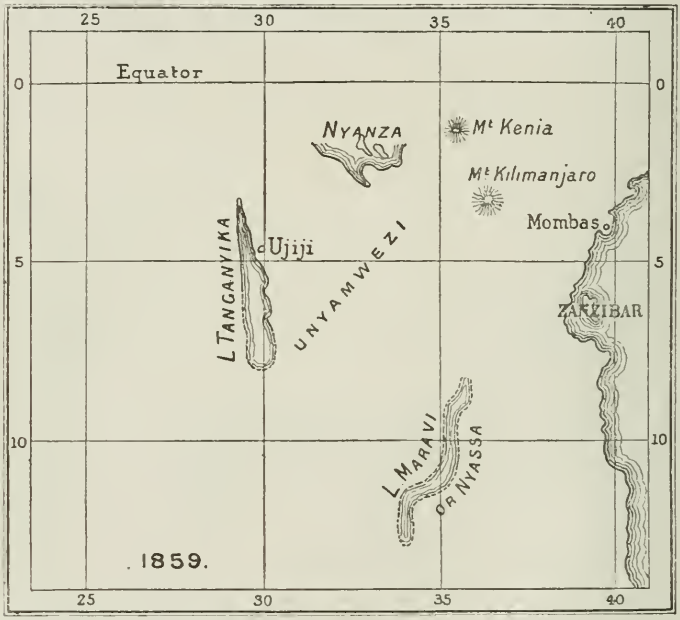
L. Uniamesi or of the Moon
Mt Kenia
Mt Kilimanjaro
Mombas
5
Lake Ukerewe
Kabogo I.
Lake Ujiji
Ujiji
Zanzibar
Nianja (Mkusa) (Great lake)
&
Nianja (Ndogo) (Little lake)
10
SKETCH MAP OF ERHARDT & REBMANN 1855

No. 2.—The Mombas Mission Map, 1855.

Each succeeding chartographer seems to have altered the positions, or altogether discarded, the lakes, rivers, and mountains which he found shown on the maps of his predecessors, until by degrees the whole centre of the continent of Africa gradually assumed an almost empty and barren appearance on the map. This was the condition of things during the first half of this century; and so late as the year 1849 we find a map published, which, with the exception of one reputed lake, "Maravi," shows the whole of Central Africa, from several degrees north of the equator to about fifteen degrees to the south, practically blank, and marked "unexplored territory," as indicated in map No. 1. The one lake shown in dotted lines, lake Maravi, had been more or less known by repute since the days of Pigafetta, a voyager and traveller who lived in the sixteenth century. No authentic information existed of its having been visited by any European; its size, shape, and importance were quite unknown; and doubts were even expressed as to whether it had any existence at all beyond being shown in the maps of the period.

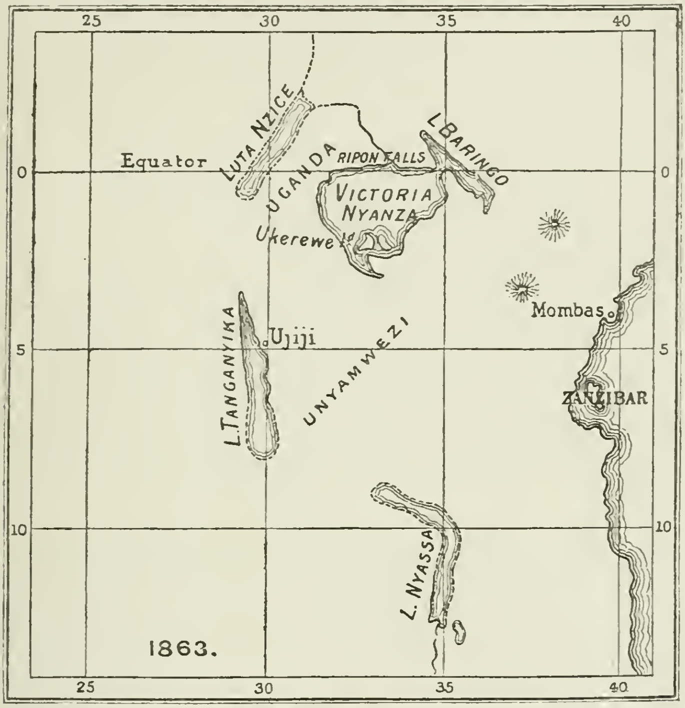
Such was the state of knowledge when, early in the fifties, an acquaintance with the interior of the continent in the vicinity of Mombas, on the east coast, began to be made known by the missionaries, Messrs. Krapf, Rebmann, and Erhardt, who had there settled. These gentlemen penetrated some distance inland, discovered the snow-capped mountains Kilimanjaro and Kenia, and accumulated much other important information. In the year 1855 Messrs. Erhardt and Rebmann sent home to Europe a rough sketch map (see map No. 2), drawn from information obtained from the native and Arab travellers, showing an enormous lake covering many degrees of both latitude and longitude. The lake, as sketched, not only covered an immense area of country, but was known in different districts by different names. Thus we find, at the extreme north, it is called Lake Uniamesi, or of the moon; in the neighbourhood of the fifth parallel of latitude Lake Ukerewe; a little further south Lake Ujiji; further south still, Nianja Mkuba (great lake); and at the extreme south, Nianja Ndogo (little lake). The most southern end of the reputed lake, it will be seen, was placed approximately in the neighbourhood of the supposed Maravi lake.



No. 3.—Burton and Speke's Map of Tanganyika and the Nyanza, 1859.

The publication of the map and the reports of the Mombas missionaries was followed by the despatch of an expedition, to Central Africa, for the purpose of exploration, under the auspices of the Royal Geographical Society, who decided to make a practical effort to obtain a knowledge of the geography of the interior.

This expedition was led by Capt. R. F. Burton, of the Indian Army, a traveller who had already won renown by successfully penetrating difficult and dangerous countries. Capt. Burton was accompanied by Lieut. Speke, also of the Indian Army who had been associated with him in a previous African expedition. Burton and Speke penetrated the interior from a point opposite the island of Zanzibar. Turning their backs on the coast, early in the year 1857, they travelled westward, and after many difficulties, of various kinds, were rewarded by the discovery of Lake Tanganyika on February 13th, 1858. The travellers struck this lake in the neighbourhood of the now well-known Arab settlement Ujiji. They explored a portion of the northern half of the lake and then turned their steps homewards. From the Arabs settled in the interior they learned that the huge lake, shown in the map of the Mombas missionaries, was a confusion of at least three lakes, viz., the Tanganyika, or Sea of Ujiji, which they visited; another lake to the north, known to the Arabs as the Ukerewe lake; and another to the south, which they supposed to be identical with the reputed Maravi.



No. 4.—Speke and Grant's Map of Lake Victoria, and Luta Nzige, 1863.

On their homeward journey, Speke, with the consent of Burton, made a flying visit to the northward, in the hope of obtaining a view of Lake Ukerewe. On July 9th, 1858, he was rewarded by the discovery of a large lake, known to the natives as the Nyanza, and to which Speke gave the name of Victoria. Speke found that a large island in the lake bore the native name of Ukerewe, and it was doubtless from this that the Arabs knew the lake by that name.

Map No. 3 shows the advance of knowledge up to the year 1859, when the expedition of Burton and Speke reached the coast on their return.

Speke claimed that the lake (Victoria) which he had discovered, was of immense area; but Burton did not attach very much importance to his companion's discovery, and in his official map showed only that portion of the lake actually viewed by Speke.

In 1859 Dr. Livingstone discovered the south end of Lake Nyassa, or Maravi, and that lake then took the form shown in map No. 4.

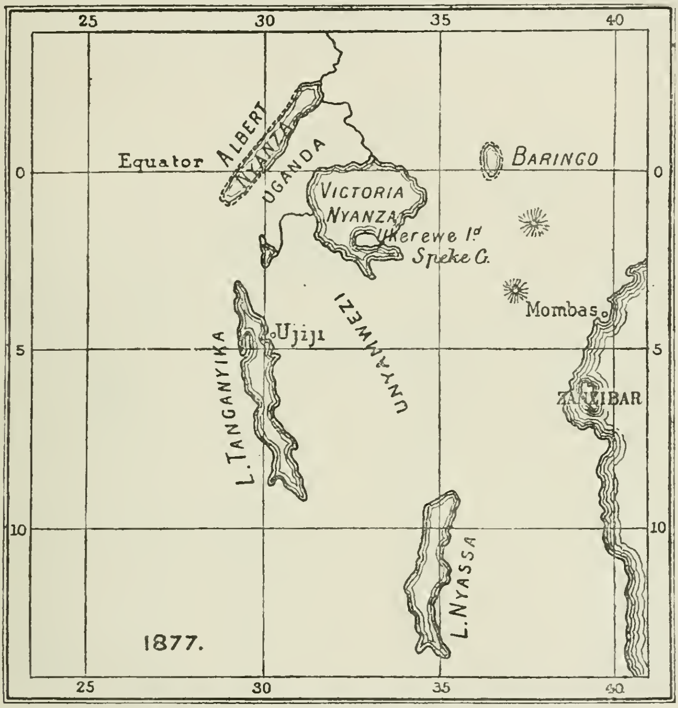
In the year 1860 Speke again set sail for Africa, as chief of an expedition proposing to learn more of Lake Victoria. He was accompanied by Captain Grant. Together they visited the north end of the Nyanza, and, partly from their own observation and partly from native report, the travellers gave the lake the shape and position shown in map No. 4. From native report, also, they were able to fix the approximate position of another lake to the west of the Victoria Nyanza, and known to the people of the country as Luta Nzige. The travellers emerged from the darkness of Africa in 1863, after three years' wanderings.

At Gondokoro, on the Upper Nile, Speke and Grant were met by Mr. and Mrs. Baker (now Sir Samuel and Lady Baker), who had come partly in search of the long-lost travellers, and partly bent on geographical discovery themselves. On hearing from Speke and Grant of the reputed lake, Luta Nzige, which they had been obliged to leave, Baker determined to take up the search, and, if possible, win the laurels which would reward its discoverer. Sir Samuel, and his heroic wife, bravely set their faces southward, and, after months of terrible suffering and hardship, were rewarded by a sight of the Luta Nzige, to which they gave the name of Albert Nyanza. They struck the lake on its eastern shore, at a place named Vacovia. The lake was not completely surveyed by Baker, only a portion of its eastern shore being followed, but, from his own observation and from native hearsay, he sketched the lake in his map, much as shown in map No. 5. Lake Nyassa took its shape, as shown in map No. 5, after Livingstone's visit to its shores while on his last journey, commenced in 1866, and its complete survey by Lieutenant Young on his Livingstone search expedition. It will be noted that Tanganyika also takes a new form in map No. 5. The northern half of the lake had been jointly surveyed by Livingstone and Stanley in 1871, and Lieutenant Cameron had, at a later date, devoted his attention to its southern half. Stanley also, in 1876, sailed round its southern half, completing his own survey of 1871, he being the only man who has completely circumnavigated its waters.

During the ten years that had elapsed, since the visit of Speke and Grant to the north of Lake Victoria in 1863 to the death of Dr. Livingstone in 1873, many varying and conflicting opinions had been expressed as to the importance and actual extent of the Victoria Nyanza. Burton was still unconvinced of the value of his quondam companion's discovery, and expressed his belief that the waters seen by Speke at the south end of the lake in 1858 were, probably, altogether distinct from the waters seen by Speke and Grant some years later in Uganda. In support of this view was the fact that Speke's observations gave considerable difference in the levels of the two waters seen by him, and Dr. Livingstone had reported, from Arab and native information, that several lakes actually existed where Speke's huge lake was supposed to reign supreme.

Stanley's visit to Africa in 1874 was undertaken in large measure to clear up this difficulty and uncertainty.

He was enabled to sail completely round Lake Victoria, surveying its shores as he voyaged. Stanley's survey proved that the Victoria was, as Speke had claimed, one large lake, and of the form shown in map No. 5. He found, however, that Speke had been mistaken in supposing that the Baringo Lake was connected to the Victoria Nyanza, as shown in that traveller's map. After completing his survey of the Victoria, Stanley travelled westward, with the intention of circumnavigating, in the same manner, the Albert Nyanza of Baker. He was unable, owing to the difficulties by which he was beset, to carry out this intention; but, he did reach a lake, lying on the equator, known to the natives as Muta Nzige, and which he, at the time, believed to be the Albert Lake, and to a portion of which he gave the name of Beatrice Gulf. The sighting of this water by Stanley, in 1876, is perhaps one of the most interesting incidents in African discovery which this century has witnessed. It was not until the great traveller had returned to Europe, and his observations had been worked out and compared with the observations of other travellers, that he suspected that the waters he had viewed were distinct from those discovered by Baker, further to the north, in 1864. At the time of Stanley's visit in 1876 the maps still showed the waters of the Albert Nyanza stretching a long way to the southward in the neighbourhood where Stanley had visited. Moreover, the Albert Nyanza of Baker bore the native name of Luta Nzige, while the lake seen by Stanley was known to the natives as Muta Nzige, names sufficiently alike in themselves to suggest the identity of the two waters.

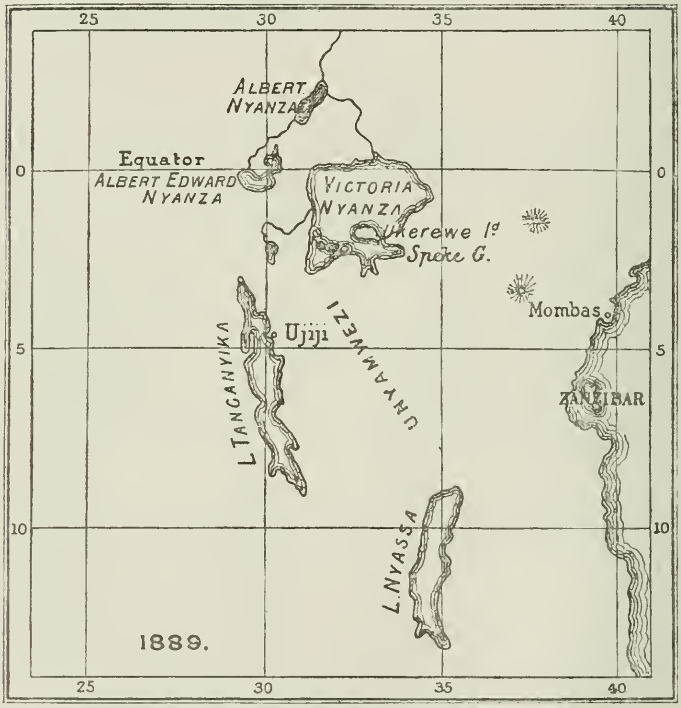


No. 5.—Stanley's Map, after his first crossing of the continent, 1877.

While Stanley had been engaged in his researches from 1874 to 1877, the expedition of the late General (then Colonel) Gordon had reached the neighbourhood of the Albert Lake, and his lieutenants, Gessi, Long, and Mason had voyaged upon its waters. Their observations showed the lake of Baker to be considerably shorter than had previously been supposed, and on comparison it was found that no gulf answering the description of Stanley's Beatrice Gulf had been seen; besides which the latitude of Beatrice Gulf, as fixed by Stanley, placed it at a considerable distance to the south of the extreme south end of the Albert Lake. Nothing further was known of Stanley's new lake from 1877 to 1889, and for these twelve years it was shown in the maps with a doubtful and dotted outline, and known as Muta Nzige.

On returning with his expedition for the relief of Emin Pasha, Stanley found himself again in the vicinity of Beatrice Gulf, and his observations now show that Muta Nzige is undoubtedly a distinct lake. Stanley has named it Albert Edward Nyanza, and it takes the form shown upon map No. 6.

When Stanley's recent expedition reached the south-west corner of the Victoria Nyanza, it was found that the lake had an extension at this point which had not previously been observed. The extension alters the form of Lake Victoria, from that shown in map No. 5, to that in map No. 6. This bay-like addition to the lake is about six thousand square miles in extent, *i.e.*, about equal in area to the county of Yorkshire, and brings up the total area of the lake to twenty-six thousand nine hundred square miles. Stanley has been taken to task, by some writers, with regard to the discovery of this bay, or extension of the Victoria. It is asked, how was it that he missed such a huge bay, in his circumnavigation of the lake in 1875? To any one, however, who has carefully read his "Through the Dark Continent" the reason is plain. It was in the neighbourhood of the newly-found bay, that Stanley's boat was seized, and its oars confiscated by some warlike island people, from whom he only narrowly escaped. He was therefore unable to hug the shore so closely, as he had done at other places, and the entrance to the bay being filled with large overlapping islands, he was naturally easily deceived as to the actual shore line. The most remarkable fact is, that, after fourteen years, it should still remain for Stanley himself to discover the



No. 6.—Map to represent the region in 1890.

existence of the bay he had overlooked in 1875, notwithstanding the fact that numbers of other travellers had voyaged on the lake and visited the district in the meanwhile.

To a large gulf, at the south-east corner of Lake Victoria, Stanley, on his survey, gave the name of Speke Gulf, in honour of the discoverer of Africa's noblest water. Would it not be appropriate to call the new-found extension Stanley Bay, and so perpetuate, on the great lake, the name of one who has done so much to make known the geography of its vast expanse?

Map No. 6 shows roughly the present condition of our knowledge with regard to the large lakes of Eastern Central Africa. In forty years the enormous blank upon the 1849 map has been filled up and made a living reality, and since 1855 the huge lake of the Mombas missionaries has been split up into many, which in turn have been proved to be connected to no less than three of Africa's largest rivers. The triple Nyanzas contribute their surplus waters to the historic Nile in the north, the Tanganyika helps to swell the torrent of the gigantic Congo to the west, while the Nyassa augments the stream of the picturesque Zambezi on the east.

Making an Island Among the Mountains.—In the south-east corner of British Columbia the Canadian Pacific Railroad Company has, by means of a canal, united two rivers and formed a large island in the rocky heart of the country. This is in the Kootenay district, so-called from the tribe of Indians that inhabit the region. All but a mere strip of this water-encircled land is edged by the Columbia and Kootenay rivers, the latter a tributary of the former. The Columbia rises east of the Purcell range, a belt of mountains parallel with the Rockies and a little west of them, flows north-west to a point half-way between the Canadian Pacific Railway and Yellow Head Pass, is turned sharply southward by the Columbia Mountains on the west and the Selkirks on the east, and through the confined valley between the two flows for 70 or 80 miles until it reaches the expansion known as the Arrow Lakes, which are about 60 miles long and but three or four in breadth; a little below this point it receives the waters of the Kootenay river, and gathering force from other affluents goes down to the Pacific in state. The Kootenay has an equally tortuous course. Rising at the western foot of the main range of the Rockies, it flows southward within a few miles of the valley through which the Columbia is flowing northward; passes the head of that river, dips into Montana and Idaho in a long, sharp sweep, that is remarkably like the one described by the larger stream in the other direction; has its widening, also, in Kootenay Lake, which is long and narrow and lies between the Purcell and the Selkirk ranges, and thence in a short branch joins the Columbia. Last year the directors of the Canadian Pacific Railroad had a canal cut through the slight strip that separated the headwaters of the two streams, and the insulation of the region was complete. A man with a canoe could probably go entirely around it by water, barring a few places where rapids or falls would render the passage perilous. The existence of so large an island—about 280 by 120 miles—is the more surprising because of the high and rugged character of the country, the entire surface being broken into huge mountain masses, that in the case of the Selkirks are capped with eternal ice and snow, and are streaked with monster glaciers. The presence of these river routes has been known for a long time, but the surveys in that quarter were few and unimportant until within a half dozen years, and they have now assumed consequence as probable factors in the future development of British Columbia, for the western part of the island has been found to contain good grazing, timber in plenty among the mountains, fish and game are abundant, and near the lakes named above quantities of silver-bearing rock have been discovered, and claims will be staked in large numbers during the coming years. One of the mines on Kootenay Lake, it is said, will pay for working by reason of its richness in lead alone. Small steamers have recently been constructed to navigate the upper Columbia, and there are several boats on the lakes already, passengers leaving for this district at Revelstoke on the Canadian Pacific Railroad. There is talk also of railway extension into this section, and the Canadian Pacific is said to be seeking a more direct route from Medicine Hat to Vancouver that will traverse a greater breadth of this island than it now crosses.

STONE MONUMENTS IN NORTH-WESTERN IOWA AND SOUTH-WESTERN MINNESOTA.

BY T. H. LEWIS.

[Read to the Members, in the Library, Tuesday, July 22nd, 1890.]

In a paper read before the Anthropological Society of Washington, February 5th, 1889, I described interesting specimens of certain "stone monuments," which, from the nature of their material and mode of construction, may be termed boulder outline figures. Last summer, having occasion to visit the valley of the Big Sioux river and the Coteau des Prairies, to the east of it, I met with a number of these interesting remains of prehistoric times and made full notes of them, of which the following is a concise account :—

THE BIG SIOUX LOCALITY.

In Lyon county, Iowa, about one and a half mile west of Granite Station, on the north side of the Sioux Falls Branch of the Burlington, Cedar Rapids and Northern Railroad, there is a plateau on which there is a large group of mounds, which I surveyed on July 29th and 30th, 1889. Scattered among these mounds, principally near the centre of the group, are many boulder outlines, representing circles and ellipses.

One circle, 34 feet in diameter, has no opening, and the boulders, 111 in number, are laid close together. A portion of the line passes over the base of a mound. Less than 100 feet distant there is another circle, 30 feet in diameter and composed of 67 boulders. There is a small opening on one side about one foot in width, the boulders marking each side of the opening being much larger than any of the others forming the circle. The base of one of the mounds, which is 60 feet in diameter and 5½ feet high, is surrounded by a circle of small boulders, 134 in number, without opening. An elliptical outline, consisting of 167 boulders, is 124 feet in length and 36 feet in width. Near by is another of still larger dimensions, but somewhat irregular in outline.

Some circles join others, in which case at the point where they unite there is but one line of boulders, which completes both circles. At one place there is a group of seven contiguous circles, all of which are connected in this manner. Among the works is a double circle formed by two series of boulders, or one circle within another, both series being close together. Many of the circles are formed of boulders weighing from 25 to 60 pounds each, and occasionally there is one that will weigh 100 pounds or more. There are also several circles of small stones, which range from less than two feet to six feet in diameter. In all instances the boulders are imbedded to a greater or less degree in the soil, some being not more than half exposed, while only the tops of others are visible above the surface.

Just south of the railroad track, and opposite the monuments described, there is a large inclosure or fort of mound-builders' times, with low walls, the surface of which within shows every evidence of former occupancy; but strange to relate, there is no evidence of boulder circles there. There were some circles outside, but none inside the fort. North of the railroad, less than one mile from the preceding locality, near the edge of a high plateau, there was formerly another group of boulder outlines, many of which have been destroyed. Noticing a few boulders protruding above the surface, and forming the segment of a circle, I procured a pick and shovel and made an investigation, in order to ascertain if the remainder of the boulders could not be accounted for, and the search was not fruitless. I found that about three-quarters of the boulders, which formed a circle 33 feet in diameter, had sunk beneath the surface or had been covered up by the soil, the depth of which above them varied from one to eight inches.

THE COTEAU DES PRAIRIES LOCALITY.

In the western part of Murray county, Minnesota, there is a series of conspicuous hills, knolls, and ridges, which are irregularly grouped, and the highest point of which rises some 200 feet above the lowest surrounding valleys. That portion of these elevations lying south of the Pipestone branch of the C., St. P., M. & O. R. R. was known to the Indians as Buffalo Ridge, and it still retains the name. The top of this ridge is some two miles in length, running in a general course from north-west to south-east through sections 16 and 21 of township 106, range 43, and finally terminating on all sides in lower spurs and terraces, the base of the whole ridge covering perhaps three square miles.

On the highest knoll there is a series of boulder outlines, mostly formed of small stones. The best preserved of these figures apparently represents a buffalo. It heads to the north-east, and its greatest length is nearly twelve feet. The horns are nicely rounded, and one of them is formed by a double row of stones. Between the outlines of the head there is a large boulder, about two-thirds of which is exposed, and which fills out the head, making it practically solid. Between the outlines of the body there were formerly one large and two smaller boulders which filled the space. The beds of matrices in which they had lain were plainly visible when I made the survey, on August 15th, 1889. These three stones had been removed by some of the settlers, probably for building purposes. This figure can scarcely be called an "effigy," but it is so nearly like one that it may be considered a connecting link between the effigy mounds proper and the boulder outlines; yet there is such a radical difference between the two extremes that a separate classification is a necessity; for while the first represents one half of an animate object in bas-relief, as it were, and is built solidly of earth, the other is a mere outline formed of stones or boulders.

But a few feet distant from the ends of the buffalo's legs there are two lines (trails) of small stones 2½ feet asunder, and running toward what has apparently been a stone heap or cairn, which is partially demolished. On the same knoll are parts of three other animals, which, judging from the traces still existing, represented different kinds, the outline of no two being exactly alike. There were two other trails, each with double lines, one being formed with small stones and the other by boulders weighing from four to ten pounds each. There were also several small circles from one to six feet in diameter, in a good state of preservation, while others that had been partially demolished could still be traced. One of the undisturbed ones was located a short distance north-east of the Buffalo, on the slope of the knoll. It was two feet in diameter, inside measurement, and had an opening five inches in width. The largest stone among those forming this circle was 1½in. in diameter, while nearly all the others were still smaller. All the stones and boulders forming the figures on this knoll were more or less imbedded in the soil, showing that they were not placed there very recently.

Toward the south-east, at the base of the ridge, about one mile distant, I discovered some new forms in boulder work, which may be called "pavements." These are not large, being only from two to five feet in diameter and composed of boulders weighing from four to eight pounds. Nearly all of these figures are round, but a few are square, or nearly so, while occasionally there is one that is irregular in outline.

The top surface is as nearly even as it is possible to make such work. In each pavement the boulders are of one size, or nearly so, and they are well bedded in the ground. There are also a few small circles and crescents, generally formed by small stones, and a few boulder trails. These different figures are scattered here and there, scarcely more than three or four being found together.

FORMER NOTICES AND CRITICAL REMARKS.

In the paper referred to, which was printed in the *American Anthropologist*, for April, 1889, I overlooked the fact that the explorer, J. N. Nicollet, who visited southern Minnesota in 1838, made particular mention of such boulder work in his report, printed in 1845.* The first reference is on page 12, as follows :—

"One mile from the Traverse des Sioux, and on the bank of the river, are the remains of an Indian camp, the circular area of which is still indicated by the heaps of stones around each lodge. As this indicates the existence of a custom no longer in use among the Ndakotahs, or Sioux, who have occupied the country for a long time back, it is difficult to assign the true origin of this relic. The Sissitons, the fourth tribe of the Ndakotahs, on whose lands these relics are found, have no tradition of them."

Two pages further on, speaking of the evidence to be found of the "erratic deposit," in the shape of fragments of primitive and transition rocks scattered over the Coteau, he says :—

"The Sioux take advantage of these loose materials to erect signals on the most elevated spots, or to designate the place by some conical structure, where some exhausted hunter has died on the prairies, and desires to be buried in a more prominent situation; or they amuse themselves in shaping them into fantastic figures. They give names to these localities, which thus serve as landmarks in a country where there are no other geographical beacons."

Again, on the same page, having described a *wi-wi*, or swamp, situated somewhere between the heads of the *tchan na tam-be*, or hidden wood, and Okshida creeks, he uses the following words :—

"Lastly, by way of illustration to what I have said above of the usages of the Sioux, I may add that, on the western side of the aforesaid *wi-wi*, and on the most elevated crest of the Coteau, there is a great accumulation of the materials belonging to the erratic deposit, of which they have availed themselves to construct the effigy of a man, so that the spot is called *tuyan-witchashta-karapi*—in English, the place where has been built up a man of stone."

On his large map, published in 1842, this particular figure appears marked in the locality described, and is designated "Stone Man." Nicollet does not say that he saw it himself, and his map shows no track to it, but indicates a route passing more directly westward from Shetek Lake by the Great Oasis, now Bear Lakes, to the Red Pipestone Quarry. He must have been a little too hasty in forming his opinion when he so readily considered "boulder outlines" to be the work of Sioux Indians, especially as it may be seen that he held the stone circles at Traverse des Sioux to be much more ancient than the Sioux occupancy of that country.

George Catlin, the painter, had previously visited the Quarry, in 1836, and he apparently saw this effigy on his return thence eastward; for in his "letter" he declares his intention of seeing the "Stone Man medicine," but there is no further reference to it in the book. It may remarked here that the name he calls it by does not favour the idea that the Sioux gave him to understand that their people had made this monument.

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* Report intended to illustrate a map of the hydrographic basin of the Upper Mississippi River made by J. N. Nicollet, January 11th, 1845 Washington, 1845.

Now, it was this Stone Man that I was most anxious to find last August, but the search was unsuccessful. The probabilities are that it, or rather the boulders composing it, has been carried off by settlers of the neighbourhood, wherever that was. There is no doubt that it was in existence until within a comparatively recent date; for a reliable man, a Mr. Casey, who was connected with the U.S. mail service, told me that he had seen it, and that it was situated somewhere on Buffalo Ridge, near the Buffalo.*

There can be no doubt that the Indians used boulders and stones to hold down the edges of their tents or tepees; and it may be further added that the whites have used boulders for the same purpose. But the remains of the old Indian camps are not to be taken into consideration in this connection for the following reason: While boulders have thus undoubtedly been utilised by the Indians, and while they may have formed, in cases, almost a perfect circle when in use, yet on the removal of the tent they would naturally be pushed or thrown to one side, thus destroying the symmetry of the circle. I have seen many Indian camping places where boulders have been used, but have failed to note a single instance where a regular circle of stones has been left on their abandonment. If the tepee theory be admitted in explanation of the larger circles, how explain the very small ones, in which even a *papoose* would find it difficult to stretch himself at full length?

There is yet need of a great deal of light on the subject of boulder outlines.

Yorkshire: Its Scenes, Lore, and Legends. By M. Tait. Maps by Mr. F. D. King. Leeds: A. J. Arnold. Price 2s. 6d.—This is a small guide to Yorkshire with nine maps, forming an atlas of the county. The text is interesting, and would be better if it was extended a little. The maps are capital. The book is a very good example of local geographical work by those who have a heart in it. We should be very glad to see similar books for Lancashire and Cheshire. It is modestly written. The members who take an interest in Yorkshire will be very glad to be introduced to a little unpretentious but capital book.

Trade on the Great Lakes of America.—It is astonishing how large an amount of traffic is carried on by these waterways. During the 234 days the Detroit river was open to navigation last year, the quantity of goods which passed along it was 10,000,000 tons more than the entries and clearances of all the seaports of the United States, and three million tons more than the combined foreign and coasting trade of the ports of London and Liverpool. This does not include the traffic between the lakes Superior and Michigan, or between Erie and Ontario, or the local traffic on these lakes. Nearly three times as many boats pass through the Sault Ste. Marie as through the Suez Canal, and it must be remembered that the latter is open to navigation all the year round. The tonnage in 1889 was 7,221,935, as against 6,783,189 for the Suez Canal. The figures relating to shipbuilding are equally surprising. In 1889 the tonnage of vessels constructed on the lakes was nearly exactly the same as of the vessels launched in all the dockyards on the coasts of the Atlantic, Pacific, and Gulf of Mexico. Of the whole steam tonnage of the United States about one-third is on the lakes. There were in the same year 21 sailing vessels of between 1,000 and 2,500 tons each, and 156 between 500 and 1,000 tons. The growth of shipbuilding has been very marked within the ast few years.—*Scottish Geographical Magazine, December, 1890.*

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* In the winter of 1854-55 a young man by the name of Northrop, who had lived in the tents of the Dakotas, more or less, told a friend of mine (Mr. A. J. H.) about a stone work he had seen on the western prairies, which was shaped like a man. This was most probably the Stone Man of Catlin, Nicollet, and Mr. Casey.

NOTES ON THE ARMENIANS IN ASIA MINOR.

(Communicated by Mr. J. THEODORE BENT, F.R.G.S., and read to the Members in the Library, July 22, 1890.)

It would appear that an almost unbroken line of indigenous Armenians extends from the shores of the Mediterranean to the Caucasus, beginning with the Cilician plain, with large Armenian populations settled at Tarsus, Adana, Sis, and the adjacent villages. This southern branch of the Armenian race represents all that is left of the kingdom of Lower Armenia, ruled over by the Reubenian dynasty till the close of the fourteenth century. For the most part this remnant of the race is thoroughly denationalised, rarely, and only in the inmost recesses of the family, speaking the Armenian tongue.

Sis represents the centre of this southern branch of the Armenian family. Here is the monastery where the patriarch professes to carry on the inheritance of the kings, and, broadly speaking, all Armenians south of the Taurus recognise him as their head. With the hand of St. Gregory the Illuminator he travels about from town to town collecting alms, and he has lately succeeded in persuading the Porte to recognise his claims as against those of the patriarch or Katholicos of Etchmiagin to be considered as the head of the Armenian race, by stating that he and his flock are loyal subjects of the Porte, whilst the Armenians under Etchmiagin are now aliens.

But in the diocese itself the condition of affairs is lamentable in the extreme Beyond an orphanage, maintained at the expense of the patriarch, at Sis, but little is done for education from the Armenian side ; and those who wish to bring up their children well invariably send them to be educated by Armenian missionaries at Adana or Marash. Hence the seeds of disunion are sown broadcast amongst the Armenians of the south. There are Protestant Armenians converts of the Armenian Boards, Roman Catholic Armenians who look to the college on the island of St. Lazaro, near Venice, as their central head, and Armenians of the old faith steeped in superstition, over whom the Katholicos of Sis at present holds an uncertain sway.

The present Katholicos Mugurditch is most unpopular in his own diocese, so much so that he dare not reside at Sis at all, but generally lives at Marash, in the mountains, coming only to Sis for the great Armenian ceremony of the Blessing of the Holy Oil, which at one time used to bring in a steady revenue to the patriarchate, but now, owing to the dissensions amongst them, it has considerably fallen off. The monastic buildings are rapidly falling into decay ; the illiterate priesthood are looked upon with contempt ; and the three divisions into which the Christian Armenians have divided themselves are for ever at variance, and preclude any hope of a concerted action on the part of the Armenians of this district.

The aspect of affairs is very different amongst the mountainous Armenians who inhabit the towns and villages of the Taurus north of the Cilician plain. Hadgin is a great Armenian centre. Here the language is openly spoken, old Armenian customs are maintained, the people are strong and active, accustomed to violent exercise, and the old horseback games are played amongst them with great vigour. They are the descendants of the warriors who fought under the kings of the Reubenian line, who, after the overthrow of the dynasty, retired to the mountains, and have maintained there a sort of semi-independence ever since.

Zeitoun, still further away in the mountains, is a still more marked instance of the maintenance of public spirit amongst the Armenians. Not many years ago a leading Armenian of Zeitoun, named Babig, maintained for long a successful warfare against the Turks, and if there had been more unity of purpose amongst the rest of the Armenians he might easily have succeeded in either throwing off the Turkish yoke altogether or, at all events, in obtaining for his race terms which would have freed them from the present state of oppression in which they live.

North of Zeitoun the Armenians all recognise the supremacy of the Patriarchate of Etchmiagin. It is one of the most striking instances of Mohammedan misrule to cross over the frontier, either from the side of Persia or the side of Turkey, near Mount Ararat, and witness the difference between the Armenian subjects of the Sultan or the Shah and those under the dominion of the Czar. In Turkey and Persia the Armenians are suppressed and denationalised at every turn, whereas the Armenians of Transcaucasia are an exceedingly prosperous and progressive race. In such towns as Naghichevan and Erivan the free scope given to their commercial tendencies has resulted in the production of many well-to-do families and considerable wealth, and no greater contrast can be afforded than between the misery and squalor of the Patriarchate of Sis and the flourishing condition of the Patriarchate of Etchmiagin. The Katholicos of this latter place is a sort of vassal king under the Czar, living in his own palace, and surrounded by a monastic establishment at once prosperous and rich. Here there is a large college maintained for the education of Armenians, leaving nothing to be desired both on the points of cleanliness and work done. Of course the answer to this, given by Russophobists, is that Russia pampers her frontier subjects with a view to paving the way for future conquests, and that if the whole of Armenia came under her rule this happy state of affairs would soon cease to exist. But at present the condition of affairs is this: misery and degradation for the Armenians of Persia and Turkey ; prosperity and peace for those under Russian rule.

Another interesting Armenian colony is to be found in and around the Persian town of Ispahan. Shah Abbas bodily removed the inhabitants of the Armenian town of Yulfa, on the Araxis, and settled them in the suburbs of Ispahan, in a town which they built and called Yulfa. For upwards of a century this colony, under the favouring wing of the Suffi dynasty, progressed in wealth and power. They built fine churches and houses, and by their commercial enterprise contributed much to the development of the Persian capital of the day. In the seventeenth century, however, Shah Ismael, when invaded by the Afghans, sacrificed the wealthy Armenians to save himself, and since then Yulfa has always been the spot to which the impoverished rulers of Persia have turned to recoup their fortunes, until the Armenians of Yulfa have been drained almost to the last drop, and the prosperous colony of two centuries ago now represents the same appearance as the other decayed towns of Persia.

A few years ago the European consuls took the Armenians of Yulfa under their protection, and they now enjoy a fair amount of security for life and property ; but the commercial enterprise is gone from them, and under the present order of things will probably not return. The Armenian villages in the mountains near Ispahan maintain intact more interesting traditions and customs than can be found in any other districts inhabited by their race.

The Ottoman Turks on their conquest of Asia Minor pursued the same policy as that which the Byzantine Emperors had followed, namely, of disintegrating and scattering the various nationalities which came under their rule. The result of this continuous policy of dismemberment is that we find Armenian villages and colonies scattered over the whole face of Asia Minor, in places where we should least expect them. These villages are mostly all Turkish speaking, but public notices and so forth are put up in Turkish and in Armenian characters. The priests, it is true, continue to go through the services in the old Armenian tongue, but none understand what they say, and very often the priests themselves are ignorant of the meaning of the words they utter.

From these remarks it will be apparent how difficult anything like concerted action will be amongst the Armenians. They are undoubtedly all very proud of their nationality and traditions, but scattered as they are and eaten up by internal jealousies, anything like the unity of purpose displayed by the Greeks at the commencement of this century appears at present almost an impossibility.

The following communication by one of our members is an Armenian view of Mr. Bent's paper, and may be of interest:—

The last paragraph but one is not correct, as it is incorrect to say that they do not understand what is said in old Armenian. The people are ignorant, and, there being no schools, are not taught the old Armenian, but all the services are understood, and they know the meaning of the services, although they may not know old Armenian. It is also incorrect to say that the priests do not understand a word they utter. In those parts most of the priests, unfortunately, are uneducated, but not to such an extent as to be made to understand the words of the service uttered by themselves.

I cannot quite agree with the author that there was and is not unity of purpose amongst the Armenians. If Babig gave up his warfare against the Turks, it was not because there was no unity of purpose, but because the British Government intervened, and I had it from the British Consul of Aleppo that through his direct intervention and the promises held out by the British Government, Babig was induced to lay down his arms, on the assurance of the English and the promise of the Turks to honestly carry out the conditions then arranged between Babig and the Turks through the British Consul, but which promise the Turks, as usual, violated, and had Babig stabbed during the confusion of a conflagration. I beg also to differ with the author when he says, despondingly, that, scattered and eaten up by internal jealousies as we are, there is no possibility of anything like unity of purpose. He is correct when he considers our scattered condition, and the Turkish method of improving upon the method of Byzantine empires in that respect, in which not a little of the blame belongs to European powers, but unity of purpose there is in the people, if only they had the chance of some little encouragement from outside. I question if the Greeks of the present are any better than us under the altered condition of things now existing. We owe most of our misfortunes to that so-called European Christendom as we have had it in the past.

The Trade of Burma.—The returns for the year ending March, 1890, are of a most satisfactory character. The value of the trade was by far the highest on record, the imports being worth about £161,500 more than in the previous year, and the exports £1,318,000 more. During the two years before the war the average value of the imports was £2,578,000; during the two transition years, £2,447,000; and for the last three years, £3,699,000. The exports during the same periods were £4,077,000, £4,592,000, and £4,702,000 respectively. The trade with Great Britain during the past year was of the value of £4,078,600. The chief imports were cotton goods, oils, provisions, ships, and parts of ships; and the exports were rice, raw cotton, and teak. The increase in the import trade was mainly due to large supplies of kerosene brought from the United States, but in almost every article trade is steadily advancing.—*The Scottish Geographical Magazine, Dec. 1890.*

NEW TRADE ROUTES INTO PERSIA.

BY MR. H. F. B. LYNCH.

(Read to the Members in the Library, Wednesday, October 8th, 1890.)

THIS paper has as its object an attempt to review the commercial geography of Southern Persia from the standpoint of the writer's experience during recent travels. A twofold consideration at once presents itself. First, what is the physical configuration of the country between the Persian Gulf and the Persian plateau? and secondly, how can we apply the results of such an inquiry to the benefit of commerce and of civilisation? Here an important element is introduced, for, given that geography has long ago decided that the present main trade route is about the worst possible, and further, that she has within recent years added much positive information regarding better roads, there still remain the important questions: May commerce enter by them? and if allowed to enter, will she be starved or fostered? This is the political element, and I will venture to offer a few remarks regarding it. The chief obstacles to the progress of commerce in Persia lie not only in the indifference of the Persian Government, but also in the apathy of the English people towards Persia and its politics. Is there any modern government, unsupported by public opinion, which would dare to pursue any policy towards any country with any continuity? Responsibility is the price of power, and your leisure is exercised by pressing problems in India and in Africa, in China and in Persia. If you neglect them, who will unravel them? After all, we have the largest interest in the foreign commerce of that power, which is no distant neighbour of ours in India; and further, the value to us of its political stability is such as to merit not our apathy but our zeal. Stretching from the eastern borders of Turkey to the frontiers of Afghanistan, and from the Transcaspian provinces of Russia to the Indian Ocean, Persia covers an area of 610,000 square miles—a territory five times as large as that comprised within the United Kingdom. Of this, the greater portion is mountain, or springless desert. Enough remains of arable, of habitable, and of salubrious districts to equal or exceed the area of our islands. The political importance to us of the development of Persia as an integral state is this: it would be onerous to hold it ourselves, it would be dangerous to let others hold it, it would be advantageous if it can progress—but progress it must—under its present rulers. When the Karun river—a great navigable waterway, and the only navigable river of Persia—was thrown open to commerce, under certain almost prohibitive restrictions, by His Majesty the Shah, in 1888, the prospect of improved intercourse with Persia was received with some interest by the English press. If certain restrictions could be removed, and if certain facilities were offered, it seemed likely that the new trade routes, the advantages of which our geographers had taken great pains to demonstrate, would descend from the province of theory to that of reality. This hope, in spite of the arduous labours of men well acquainted with the methods and habits of the East, has only been partially realised. While His Majesty the Shah was being feted by the merchants of London, I was a witness, as a traveller, of the scanty help, to say the least, which the Persian Government extended to the efforts of London merchants on the Karun. A mere declaration that a river may be navigated is not tantamount to opening it to commerce; nor is it within the power of individuals to persuade the Persian Government to take those measures, the necessity of which it is their duty to point out. In what manner the proper navigation of this river will affect commercial intercourse, it now becomes my object to describe.

The physical geography of Persia is a fascinating subject of study. Crossing the grain of a mighty range which stretches from Europe to India, the traveller arrives on a vast plateau, which, from an elevation of four to five thousand feet, sinks to the unexplored recesses of the great salt desert, and rises thence to the northern mountains and the valleys of Khorassan. Between the mountains, or where they border a wider stretch of plain, rivers or rills of glacier water spread rich fertility beneath a quickening sun. No rain falls in summer, but the altitudes are high, the atmosphere rare, and the climate is delicious in summer, and cold, but bright, in winter. The plateau itself, upon which you emerge from the parallel valleys and long ridges of the mountain range, is stony and sterile. Eastwards, its bleak and bare expanse stretches to the salt sands. Here and there a stream or river flows to the plain, and, soon exhausted, sinks. Along the banks of the precious water, by the verge of the tiny channels into which it has been diffused, a rich growth of brightly-green foliage starts with a fairy vigour and perfection. Luscious melons swell beneath the hot sun on the moist earth, and the red pomegranate or pale apple hangs from the branch, or clinging bends it beneath the deep shade. Such oases relieve and refresh the eye and sense, tired to weariness by the glare and heat and dust.

The largest cities and the central points of attraction to commerce by the Persian Gulf are situated on the plateau. Of these, Ispahan contains some 80,000, and Teheran some 200,000 inhabitants. The volume of the trade of central and southern Persia flows from and to the Persian Gulf, by mule or camel transport. From the Gulf there is cheap water carriage to India and to Europe. A portion passes by the Black Sea route, *viâ* Trebizond ; while the rich province of Khorassan and the shores of the Caspian are enclosed within the widening zone of Russian commercial supremacy. Bushire stands at the entrance of the main avenue of the Gulf trade ; thence a most difficult track leads over high and precipitous passes to Shiraz ; from Shiraz the way is easier towards Ispahan and Teheran. The distances along this at present the principal road into Persia by the Gulf are, Shiraz 200 miles, Ispahan 520 miles, Teheran 800 miles ; and the elevations between Bushire and Shiraz a pass of 7,250 feet, between Shiraz and Ispahan one of over 8,000 feet, between Ispahan and Teheran the Kohrud pass of 8,750 feet. The difficulties along this road are so great that bulky goods are taken by river to Bagdad, and thence, after passing the barriers of a Turkish custom house, reach the plateau by the easier route *viâ* Kerrind. A glance at the map will show the advantages which Shushter, at the head of the navigable portion of the Karun river, possesses over Bushire. Here you have a port distant by land some 130 miles from the Persian port of Mohammerah, to which ocean steamers have access. Shushter commands a series of routes to the more populous districts and cities of Persia. The chief among these are (1) From Shushter, *viâ* Khoremabad, Banyird, and Sultanabad, to Teheran, a distance of 480 miles, as against 800 miles between Teheran and Bushire. The elevations along this road are : For a distance of about 110 miles its profile rises from under 6,000 feet to passes over 7,000 feet high, the highest being that of Kushkedar, between Sultanabad and Banyird, 7,490 feet high. A group of European capitalists are engaged in constructing a cart road across this section. (2) From Shushter, *viâ* Malamir, to Ispahan, a distance of 250 miles by the road, which I have described in the current number of the Royal Geographical Society's Proceedings. The high altitudes along this road extend for a distance of about 80 miles, and the highest pass along it is 8,650 feet high. By these two roads the distance between Teheran and a port is reduced from 800 miles, *viâ* Bushire, to 480 miles, *viâ* Shushter, while Ispahan holds the benefit of 250 as against 520 miles. The first of these two routes from Shushter traverses a country which has been subject to the depredations of the Lur tribes, but the opening of the Karun river, and the revenues derived from increased traffic, will make it worth while for the Persian Government to insure its security. As to the second, it lies through the country of the friendly Bakhtiari, who are well within the authority of the Persian Government.

The mention of the Lur tribes, and of that widely-spread subdivision of them which bears the name of Bakhtiari, leads me to another aspect of the political factor which is so important an element in the consideration before us. The normal political condition of the nomad tribes, who wander over the Persian mountains from Kurdistan to Shiraz, has been that of a nominal allegiance to the Persian Government. The present Shah has done much to consolidate his power; the tributes are more regularly paid; and, at least, the chiefs of the Bakhtiari retain their positions at his will. The opening of the new trade routes, the extended use of tracks, the construction perhaps of roads, will further his general policy, and, what is more important, will present him with an opportunity of drawing the personnel of his army from a fine race of hardy mountaineers, whose allegiance he will, with improved communications, possess ample means to secure. I have said that along the direct road which leads from Shushter to the Persian plateau, and to Ispahan—a distance of 250 miles—there need be no apprehension for the safety of life and property; but this is a barren statement, and I would ask you to bear with me while I attempt rapidly to describe, under certain aspects, the life of the Bakhtiari clans and their princes, through whose territory the new trade route to Ispahan will pass.

Pardon me if I refer you to the map, which I have recently made, for the position of the valley of Char Kher, between Shushter and Ispahan. There, at an altitude of over 7,000 feet above the sea, are the summer quarters, the summer encampment, of the princes of the Bakhtiari. You have emerged from the parallel troughs, from the parallel ridges of oak-studded mountains; you are in a country of high uplands. The chains are more widely distant, the expanse is greater, the surface of the plains is darkened with recent tillage, and across this solid depth of colour you look to the amber lights and liquid shadows which the naked limestone walls reflect to the declining sun. Where the mountain forms tend to circle beyond the great plain or plateau of Ardell, a level valley lies, enclosed by lofty peaks and barren parapets. Many a fierce contest has raged within it, when the two rival clans of Haft Lang and Chahar Lang have fought for the supremacy of Greater Luristan. In its centre is built a little fort, a stronghold of the Haft Lang clan. Round it their black tents cluster, and among them the white canvas of the princes is from afar conspicuous. Their flocks, and herds, and droves, are pastured on the banks of little streams, or on the oozing borders of a marsh. What is their rank in civilisation? I may recall certain features without presuming to generalise. Let me commence by saying that the Mohammedan faith is accepted throughout these mountains, and that, at least, its forms and its language, which in themselves shed a simple beauty on life, have passed into the common mould of demeanour and expression. But the nature of religious professions is a slender test of enlightenment—it is more useful to inquire what resources of science they command, to what cultivation of mind and manner they have attained, and what are their notions of right and wrong. It is without the scope of my narrow limits to pursue with sufficiency this inquiry into the habits and customs of these nomad tribes. Their views, if pronounced, are at least primitive, and they are sufficiently virtuous to despise the perfidy of the Persians. Nowhere, perhaps, except among such mountains, is the spirit of feudalism as green and vigorous still as in our early centuries ; nowhere else can you better examine, and perhaps admire more, the organisation of personal obedience based on personal respect. A form of feudalism which does not rest on any system of private land tenure, which obtains among a people who hold their pastures in common, or cultivate a strip of land where, when, or how they please, is unfamiliar to us. It is, no doubt, its simplest and earliest form ; and he who can bring himself to acknowledge, even amid the political passions of our own environment, that with all reform comes loss as well as gain, will dwell with pleasure on a phase of life which only survives among ourselves in forms and ceremonies—just as in the body of some animals some bony excrescence serves to remind us of former functions, different, but no less real, which have been lost by long disuse.

The life of the princes themselves presents a striking picture of many-sided contrasts. Educated among the surroundings of the Persian courts, they have attained that perfection of manner and polished expression which is, perhaps, without a rival even in the annals of the French Monarchy. On none have I seen this courtliness of demeanour sit with greater grace than on these princes. By nature they are more refined than the ruling Kadyar dynasty—their expression is animated and their gestures free but sober. And yet an element of childishness underlies these polished manners. A new rifle is to them as a new toy, and with a fine recklessness they will roll over a dog or lame a pony, which grazes in the distance, to show you their unerring aim. Their firearms come from England, and are of the most modern pattern. A young chieftain at the head of his troops is as wild a warrior as you could wish to see. At the full gallop he fires to front or rear ; his beautiful Arab mare extends or curbs herself to his will ; yet when he has doffed his national dress and attired himself in a dark and braided suit—which is made on a London pattern, from cloth manufactured perhaps at Leeds—it would be hard to recognise in the quiet gentleman the daring freebooter of your morning's ride. Not unversed in the history of Europe, he will often surprise you by some well-reasoned reflection on historical incident. In the midst of enlightened conversation the thought arrests you, Is this the man who would kill his brothers without compunction or remorse ? To the hard surroundings of a life in camp a sumptuous country house presents an antidote—it is beyond the confines of their own country, and their rude followers are perhaps ignorant of the luxuries which their masters leave them to enjoy. The palace itself presents a picture of no less various colouring. What a contrast between its rude frescoes and the portraits of English ladies, fresh from Bond Street, which adorn its walls ! The aged doctor, in one apartment, strokes his long white beard over the precepts of a Galen and is ignorant of the virtues of quinine. In another they serve you a dinner *à la Français*, on Minton's porcelain. I shall not forget the evening when we halted before the blind walls of a large enclosure, at midnight, beneath the risen moon. It was indeed a surprise which our hosts, who were unable to accompany us, had designed for my companion and myself! Through a long and narrow passage, dimly lighted, we passed. We saw, or thought we saw, the forms of girls flitting before us from door to door, in wonder who we were. A large and open court displayed a voluptuous view to the noble rooms around it. How distant seemed the toils of our journey, the stones' glare and dust. The water bubbled in a large stone basin cut crosswise in the court, and at the angles rich beds of mauve and madder asters shed colour over it. On cushions of velvet, among the bending flowers which Persian art had shed over walls and ceiling, we slept. Such are the surroundings of mountain camp and gentle garden, from which I turn to my main theme, which I must now attempt to develop and to close.

It is now nearly two years since the Karun river has been declared open to navigation as far as Ahwaz, where there is a natural ledge of rocks across the stream. A continuous steam service has, after much negotiation, been organised, both above and below Ahwaz. Why is commerce still loth to enter, and avail itself of the new trade routes? This is an important question, which those who are interested in commercial geography will not hesitate to ask. How much of the trade of the great industrial town of Leeds, I wonder, depends on these eastern markets? Can Manchester look upon them with indifference? The commerce of Great Britain and India with Persia has been recently estimated by a careful writer at a value of £2,500,000 a year. That figure alone makes it seem worth while to attempt an answer to this question. The reasons may be briefly stated thus: (1) The collection of customs is still in a state of disorder. A settlement was arrived at nearly a year ago between the British and the Persian Governments, by which the customs are to be collected at Shushter, the port of terminus, but this important measure still remains unfulfilled. (2) A portal service on the Karun requires to be organised. This is a matter for our own Government, and its importance has been pointed out by experienced writers, such as Colonel Bell and Sir R. Murdoch Smith. These are the leading obstacles to commerce as far as Shushter. Unless they are removed it will never flow. Once it has penetrated to Shushter it will soon pass further. The development of the short track to Ispahan is well within the power of the Persian Government, and I hope they will see the wisdom of taking those steps in this direction which I have pointed out in detail in the paper to which I have before, with your pardon, alluded. The advantages which will accrue to Persia by the opening of the new trade routes will be enormous. The benefits to ourselves will not be insignificant. In the past our interest in Persia has been spasmodic. At times we have thought no expenditure too extravagant in supporting her—at others we have wrapped ourselves in a cold indifference to her fate. While we must recognise the many difficulties which beset our Government in their dealings with Persia—while no impartial spectator will refuse to admit that the cause of Persian progress has been furthered within recent years by their initiative—still the uneven history of the old era suggests an apprehension lest it may be repeated, and that the zeal of our statesmen will diminish as the complications they encounter increase.

Alaska's Long Coast Line.—Lieutenant-Commander Stockton, in his lecture before the National Geographic Society, Washington, on his remarkable cruise on the steamer Thetis, during the summer of 1889, along the northern coast of the American continent, to the Mackenzie river, calls attention to a fact which may surprise some readers. Alaska has an area of about 580,000 square miles, with a coast line 6,650 miles in length, and also including 1,100 islands with a coast line of 2,950 miles, the entire coast line being 9,600 miles long. The coast line of the rest of the United States, including islands, is only 6,580 miles. Thus the coast line of Alaska is 3,020 miles longer than the coast line of all the rest of the United States.—*Goldthwaite's Geographical Magazine, April, 1891,*

Winter Weather in May on the Plateaus of Tibet.—Capt. Grombchefsky has returned to St. Petersburg from his travels in Tibet. In the middle of May last he reached the Tibetau plateau, in the north-western part of that country, a little south of Polu. When he reached the surface of the plateau he was 16,000 feet above the sea. The season was not far enough advanced for travel at that elevation. The springs were all frozen and the snow unmelted. The abrupt change of climate from the warmth of Keria, only a few days' march further north, to the cold of Tibet, was exceedingly trying for men and beasts. A considerable tract, however, was visited and mapped. This corner of Tibet was found to bear a close resemblance to the extreme western portion visited the previous winter, consisting of the same sandy, saline wilderness, intersected by low ridges of hills, forming deep hollows filled with extensive lakes.—*Goldthwaite's Geographical Magazine, April, 1891.*

ON THE PRESENT STATE OF THE ORDNANCE SURVEY, AND THE PARAMOUNT NECESSITY FOR A THOROUGH REVISION.

By HENRY T. CROOK, C.E.

[Addressed to the Members, in the Library, October 8th, 1890.]

In his presidential address to this section at the Brighton meeting, eighteen years ago, Mr. Francis Galton dwelt on the comparative neglect and indifference which the public showed to the work of the Ordnance Survey.

In proportion to the area of which Government maps are procurable the demand for the maps at the present time, judged by the sales, has not increased. It would seem, therefore, that the productions of the Survey have become less instead of more popular since the time when Mr. Galton drew attention to the matter. In a scientific age, when the purposes for which accurate maps are required are ever increasing, the falling off in the sales of the national maps, for the making of which the country has paid an enormous sum of money, is, to say the least, a startling phenomenon. Nearly twenty years ago, estimating from the annual value of the maps sold at that time, General Sir Henry James thought that when the Survey was completed (which, in theory at all events, it is now supposed to be), the yield from sales would be at least £30,000 per annum, whereas for the year ending last December the value of sales only reaches the paltry amount of £13,164, whilst the value of presentations to public departments and Government institutions and under the provisions of the Copyright Act amounts to nearly £6,000. It would be difficult indeed to find a parallel for a work of equal magnitude and importance yielding such disappointing results. The partial failure of our great national cartographical institution to realise the legitimate expectations formed of it seems a proper subject of inquiry for the British Association, one of whose objects is the removal of disadvantages impeding the progress of science. There are only three ways in which this condition of things can be explained. They are :—

1. That even with the schoolmaster abroad the present generation requires fewer maps.
2. That the maps are not accessible, and therefore not known.
3. That the maps do not meet popular requirements.

The first explanation is obviously untenable ; there is a good deal to be said for the second ; but, after careful examination and inquiry, I have come to a decided conclusion that there is far more importance to be attached to the third. Speaking of the one-inch maps only, Mr. Galton said, "It is much to be regretted that these beautiful and cheap maps are not more accessible. They are rarely to be found even in the principal booksellers' shops of important country towns, and I have never observed one on the bookstall of a railway station. Many educated persons seldom, if ever, see them ; they are almost unknown to the middle and lower classes ; and thus an important work, made at the expense of the public, is practically unavailable to a large majority of those interested in it, who, when they want a local map, are driven to use a common and inferior one." This can be more truly said of the large-scale maps than of the one-inch, which is the only one at all popularly known, and, in fact, is often spoken of as *the* Ordnance map. The latter is by far the most important of the series to the bulk of the map-using public, and something more than the mere difficulty of obtaining it is required to account for its unpopularity.

We cannot arrive at a right conclusion as to what it is that stands in the way of the full and complete utilisation of the Ordnance Survey, unless we take into consideration its work as a whole. The Department has attempted or has been directed to undertake far more than it had the means to carry out in any reasonable time. The cadastral surveys have, during recent times especially, occupied the chief share of the Department's energies, to the exclusion or indefinite delay of the original and more popular work. It has almost abandoned cartography for land surveying—maps have given place to plans. No one, in these days, will dispute the advisability of carrying out the parent survey on the largest required scale, but, like most scientific undertakings, the survey has suffered severely from constant Parliamentary interference. The scope of the undertaking has been enlarged without a corresponding increase in the establishment and in the annual grant. Since the general lines upon which the work was to proceed were finally determined in 1863, the chief difficulty has been with the throttle-valve of the Treasury. The result is that after more than a century's existence the Department has not yet completed one of its works. Apart from mere skeleton or index maps, it has not yet produced on any scale a uniform map of the British Isles.

A generation has elapsed since the completion of the great triangulation, and yet of the original scheme, the one-inch hill-shaded map of the kingdom, there still remain to be completed 30 out of the 131 sheets of Scotland, and 25 out of the 205 comprised in Ireland. The six-inch map commenced in Ireland in 1825 is the nearest to completion; it is stated that it will be finished early next year. The $\frac{1}{2500}$ map, commonly known as the 25-inch, the true cadastral survey, was commenced in 1854. Considering the magnitude of the task it has so far been executed more rapidly than any, but still a great deal remains to be done. The important counties of Lancashire and Yorkshire, several counties in Scotland, and almost the whole of Ireland, excepting Dublin county, have still no maps on a larger scale than six inches to the mile. It has, in fact, only just been decided to re-survey Ireland on the 25-inch scale. In those districts where the one-inch map had not been published, the change, first to the six-inch and then to the 25-inch for the parent survey, necessarily delayed the publication of maps on the smaller scales until the introduction of the photographic and photo-zincographic methods of reduction and printing. Still one cannot fail to be struck by the phenomenal slowness of production which has characterised the work as a whole. In consequence of the length of time which it has taken, and the neglect to provide for a timely revision, the major portion of the maps are obsolete and of little more than historical interest.

No one who knows anything of the subject questions the original accuracy and finish of most of the maps which the Ordnance Office has produced, or of the valuable work which has been done in the advancement of geodetical and astronomical science. It is necessary to say this, for it has frequently been charged against those who have from time to time presumed to criticise the work of the Survey that they have been oblivious of these things. At present we are concerned merely with the question why the maps are so little utilised, and the reasons for the apparently low estimation in which they are held by the public. Stated in the probable order of their importance, I think the reasons may be tabulated thus:—

A. The maps fail in many cases to meet the requirements of the classes of users for which they are presumably designed, on account of—

(1) Age. For want of revision large portions of even the 25-inch, but more particularly the six-inch and one-inch maps, are very incorrect, and in many cases quite obsolete.

(2) Bad impressions or impressions from old or worn-out plates.

(3) Complexity (in the one-inch map) through overcrowding of detail, causing confusion, the map being printed in only one colour.

(4) Deficiency in information as to ground forms, particularly in the six-inch map (excepting Lancashire and Yorkshire).

(5) Want of uniformity.

(6) High price, especially in the case of the six-inch, quarter sheets, and on all scales where sheets are partially blank.

(7) Lack of explanatory information with the maps.

B. Inaccessibility. The general public knows little or nothing about the maps, because of—

(1) The system of sale.

(2) Bad indices and absence of information as to age and style of maps published of particular districts.

It is impossible to estimate the separate effect of each of these defects in the maps and in the means of distribution, but a few examples will establish the fact of their existence and the way in which they operate in depreciating the value and checking the sale of the productions of the Survey.

Suppose, for instance, a member of this Association coming to Leeds desires a handy map of the district, and turns to see what the Ordnance Survey provides for him. He will find the town of Leeds is in the south-west angle of sheet 70 of what is facetiously called the new one-inch hill-shaded map, date 1858. He will be able to obtain the sheet to the west of the same series, but for the southern half of the desired map he will have to fall back upon two sheets of the old survey, dated 1841-3, much inferior, of a different shape, containing only three-quarters of the area of the new sheets, but equally expensive. The resulting map is eminently unsatisfactory. It shows defects 1, 2, and 5 very conspicuously. To the environs of Leeds as they are to-day it is no guide whatever. So far as the ground forms are concerned the two upper sheets are good enough, but in the two lower the hill shading has practically vanished, and in many places the roads and rivers are fast fading away also. The plates are obviously quite worn out.

Let us now look at the English lake district. Here, at all events, if the maps meet popular requirements, they ought to be in constant use. But what do we find? Traverse the lake district from one end to the other, you will see plenty of maps of all kinds in use, but seldom indeed will you find that any one of them is an Ordnance map.

Here are four sheets, 29, 30, 38, 39, again of the new series, though this time the date is only quarter of a century back. Defects 1, 2, 3, and 5 are all more or less noticeable.

Here the want of uniformity is not in the age and style or shape of the sheets, but in difference in depth of shade of the impressions. It may be said that by careful selection the sheets might be better matched. Possibly so at the Survey Stores. This is the best the agent could do. It is a fair specimen of what the public gets, and therefore one by which the Survey must be content to have the productions judged. The hill shading, particularly in the Coniston sheet, has become quite woolly, consequently the hill forms are deficient in relief and character. A very large proportion of the names are unreadable, and the plate seems to have been injured in places by the erasure or alteration of some of the figures denoting the heights of the mountains.

The roads and footpaths are very indistinct, and some of the most frequented are not even shown. I have recently compared the maps of this district by Bartholemew in a well-known guide book, and for pedestrian purposes, bald as they are, they are more useful than the Ordnance maps?

The important question of price also comes in. The Ordnance sheets alone cost 4s., but to be of any use they must be made up in a portable form, which can only be done by sectioning and mounting. Thus, before the Ordnance map of this district can be utilised an outlay of 7s. 6d. is required, a sum sufficient to buy two copies of a good guide book with all its maps. Can we be surprised, then, that the public do not buy the Ordnance maps?

Sheet 38 is printed from an electrotype taken in 1882. I do not know at what date the plan of keeping the original plate or the first electrotype matrix was introduced, and it may be that the plates of these sheets, for which at one time there was a great demand, are much worn, which would account for the fact that the lake district sheets now sold are some of the worst of the new series of the northern counties. Compare, for example, the Hawes sheet, No. 50, which retains nearly all its original beauty and crispness of definition in the ground features.

If it be of the south of England that we require a topographical map, we shall fare no better, rather worse. Last year I required a map for the volunteer manœuvres in the neighbourhood of Eastbourne. There is no map suitable for military purposes—that is, showing the ground features—of more recent date than 1813. It is one of the earliest maps of the Ordnance Survey, published at the Tower by Colonel Mudge. For the time of its execution, undoubtedly a most creditable piece of work, curiously enough it is in a better state, so far as regards definition, than the maps of the lake district made fifty-two years later; but speaking from experience, I can say that the ground features are by no means correctly delineated. This can be proved by another sheet, No. 8, also done under the direction of Colonel Mudge, and evidently by the same hand, which can be compared with the new hill-shaded map. From about 1830 onwards the hill shading much improved, and has continued to improve until it can now be fairly claimed that maps recently issued are unsurpassed in this particular by the productions of any country, but it is no satisfaction of the claims of the inhabitants of Sussex to be told that they can have an exquisite map of the Western Highlands of Scotland, and no one will maintain that these maps of sixty to eighty years ago answer the reasonable requirements of to-day. Towns such as Eastbourne, Hastings, St. Leonards, and Newhaven are shown as mere villages. It is upon an entirely different England we are gazing in these sheets, and one is inclined to resent the attempts made here and there to modernise them by addition and alteration; the railways especially seem a shocking anachronism. Such additions and alterations destroy the real value of the maps as antiquarian documents. In this connection it is particularly interesting to note the disappearance of the commons and the village greens in comparing the old and the new maps.

Why should the public buy these maps when it can get maps at one-quarter the price, which, for most purposes, are as useful, and, what is of greater importance, up to date? The truth is that of the whole of the southern counties of England (except in the few places where the new hill-shaded map is published) no topographical map worthy of the name exists, and for the remainder of England and Wales, where it does exist, its antiquity robs it of much of its utility, and the plates of populous areas are worn out. The so-called new survey, north of the line Preston, Leeds, Hull, we have seen, is from 25 to 35 years old; whilst the few sheets published of Surrey, Kent, and Hampshire are from surveys at least 20 years old. The more recent sheets published of this map do not bear the date of the survey. The Aldershot sheet, for example, published in 1878, is from a survey of '70-'71. Reference has to be made to the six-inch map to obtain this information. This is not fair to the purchaser, who, in most cases, is ignorant of the internal arrangements of the Survey, and imagines the map to be corrected up to or within a short time of the date it bears.

The new one-inch map, published without the hill features, called the outline map, gives no idea of the nature of the ground. Only contours of each 100 feet are given, and these are so finely drawn as to be barely visible. Even without the hill shading this map is often so crowded with detail that it is very confusing and difficult to read. Take, for example, sheet 38.

Many sheets are spoilt by the number of names of parishes and boundaries which might very well be omitted from both the outline and hill-shaded one-inch maps. Of the 360 sheets comprised in the new one-inch map of England and Wales, 179 have been published in outline and 81 with the hills shaded. The outline map cannot be considered anything more than a stop-gap publication. It is true the Director-General says the outline map appears from the numbers sold to be more popular than the hill-shaded. One is loth to assume that the ignorance of topographical representation in this country is so great that there is a preference for the sweet simplicity of a map giving practically only the horizontal development of the ground over one representing both the horizontal and vertical configuration. But it can easily be understood that an outline map from a survey of 1870 may be preferred to a hill-shaded one of 1813, which, as we have seen, is the only choice open to a Sussex man. There is a danger, too, in the publication of the outline map which must not be overlooked, and that is that the Treasury may consider it an excuse for still further delays in the publication of the topographical map. Looking at the return for the last four years, it would appear as if advantage had already been taken of that excuse. Here is the return :—

ENGLAND AND WALES, 59,540 SQUARE MILES.

New one-inch map. State of publication.

	Total area completed.		Area completed during year.	
Year ending	Outline.	Hills.	Outline.	Hills.
Dec. 31st, 1886	18,616	11,544	432	52
„ 1887	24,150	11,955	5,534	411
„ 1888	25,101	12,524	951	569
„ 1889	29,478	12,524	4,377	Nil

This table shows that last year the hill-shaded map was not advanced at all, whilst the maximum rate any time during four years has only been two or three sheets per annum. At this rate the map will be completed towards the close of the next century. Fortunately the case is not quite as bad as it would seem to be from the present rate of progress. In his last report the Director-General estimates that it will be completed in 1925. Anyway we shall have to wait for nearly a generation before we shall be in possession of a complete and tolerably uniform topographical map of the United Kingdom. Surely such a statement by itself is sufficient to condemn the system by which the Treasury doles out the grants for each particular map bit by bit.*

The deficiencies of the one-inch map have been treated at some length because it is the most important from the popular point of view. Most of the defects, it will be seen, are due to the age of the maps and the want of revision, and the same will be found to hold good of the six-inch and larger scale maps.

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* In consequence of the limited sum spent on it annually, the hill-shaded map of England and Wales alone will have, when completed, occupied 53 years in the making.

The six-inch or county map has undergone more vicissitudes than any other of the Ordnance series. The maps of the counties in England and Scotland first surveyed on this scale are the finest productions of the Survey (for examples see sheets 78 and 79 of Lancashire). Commenced in a style which soon aroused the attention of economists in Parliament, it was stopped in 1851. Then came the battle of the scales, after which the $\frac{1}{2500}$ scale was finally adopted as that of the parent Survey. When ultimately it was decided to resume the publication of the six-inch map by reduction from the larger scale, it was with a greatly reduced number of contour lines. Unfortunately it appeared to the Commission of 1858 that the original work was too elaborate, and it recommended some economies, which, of course, the Treasury jumped at, consequently the rest of the country had been deprived of the only map which gives an adequate delineation of the forms of ground. For nearly all scientific purposes, but especially geological and engineering, maps on this scale are essential (where the $\frac{1}{2500}$ scale is published there is little other use for them); in fact, it was from the representation of geologists and engineers that the publication was continued. Being a map intended for the use of particular classes, it ought, as far as possible, to meet the requirements of those classes, which in its present form it does not. The adoption of the photographic method of reduction and printing necessitated the publication in quarter sheets, which can never have the exquisite finish of the old sheets of Lancashire and Yorkshire. But however much the absence of artistic merit may be regretted, a process which insured more rapid publication would have been welcomed had it not been accompanied by an advance in price equal to 60 per cent. Before the introduction of the photozincographic method of printing, the introduction of photographs for the reduction of the cadastral maps is said to have effected a saving of £35,000 on the survey. The users of the six-inch map can fairly claim that, as they have to pay so much more for an inferior map, the least that could be done for them is to spend the money saved at their expense in completing the contouring at 25-feet intervals throughout the country.

One of the most irritating defects of the large scale maps is the partly blank sheet. In the case of the more recent issues this defect has been remedied by transferring a portion of the contiguous county map, but when the two surveys are of very different dates and style this can hardly be successful ; but still it is better than the expensive patchwork arrangement which is required to make a map of a river basin, when the rivers and tributaries are county boundaries, as, for example, the Mersey. To complete one Cheshire sheet, No. 20, of the valley of the Goyt, no less than six quarter sheets of the Derbyshire county map are required. The six-inch, when up to date, affords a handy town map, but where the lines happen to cross a town the number of sheets required (which may be as many as four, costing 4s.) gives the Ordnance map no chance in competition with inferior but very much cheaper reproductions. If the maps for which the nation has paid so large a sum are to be freely circulated the Department must learn to cater for public requirements. If private individuals find a remunerative sale for cheap reproductions of the Survey, the Department must compete with them, not necessarily as to price, but the price and quality combined must be such as will, in the case of an educated purchaser, turn the scale in favour of the Ordnance map. There is no reason why special sheets of all considerable towns and environs should not be prepared by transfers on the six-inch and one-inch scales. There is amongst the miscellaneous maps of the Survey one of the environs of Glasgow, on the one-inch scale, prepared in this way (price 2s.), which, if printed in colours, hill-shaded, and folded into a cardboard cover, would answer the purpose.

It cannot be denied that most of the Ordnance maps are very expensive. Sir

Charles Wilson says that the selling prices per square inch of the Ordnance Survey maps are cheaper than those of foreign countries, excepting France and Italy. This, however, is hardly the point. The Survey costs, roughly speaking, a quarter of a million per annum, and the value of the maps sold annually is about £13,000. Clearly the price of the maps is a matter of very little importance for the amount yielded, but it is of the greatest importance if the maps are to be made available for general use. The basis upon which the prices of the different maps are fixed does not seem a very rational one. It lies in a very refined distinction between the cost of production and the cost of publication. The cost of production is supposed to end with the engraved copper plate in one case and with the photographic negative in the other. The subsequent processes of printing, preparing new editions, cost of storage, &c., are called expenses of publication. These being heavier in the photographic process, the price of the maps produced by this method is greater. Thus, whilst the total cost of map-making has been largely reduced by the introduction of photozincography, the nation getting more work for the same money, the selling price of the maps has been raised 60 per cent. A system which can produce such an absurd result as this is surely in need of reform.

So far as the great cadastral map is concerned there is no ground for complaint. It fully answers all that is required in a work of that class, and is one of which the Department may feel justly proud. But the very best work in maps becomes of very little value if not kept up to date. It is quite time that a permanent revision department was instituted on a liberal basis if the great work which has been accomplished is to retain its value. Already large portions of it are disgracefully obsolete, and consequently the smaller scales reproduced from it. The new one-inch lags so far behind that it is often obsolete before publication. Does any other nation in the world exhibit such a spectacle as a Government cartographical institution engaged in the production of obsolete maps? Again and again has this, the necessity of revision, been pointed out. Every Director-General has pressed the matter on the attention of the Government; it is dwelt on in every annual report. In 1882 the Treasury "recognised the necessity of a revision of the Survey which should be constantly in progress at such a rate as would complete the whole in every fifteen years at least;" but it was not until December, 1886, that they decided to commence, adding the following extraordinary memorandum: "It is to be clearly understood that in agreeing to the commencement of the revision they do not bind themselves to any fixed term for its completion, or to the annual provision of any fixed sum for carrying it out." This is the sort of thing which is absolutely fatal to the proper conduct of a department like the Ordnance Survey. It is a repetition of the indecision and blundering which have cost the country so much in the past, and to which most of the deficiencies of the Survey are attributable.

It would be a good plan for the information of the map users if this Treasury memorandum were printed in red on the margin of every sheet which has not been revised for more than fifteen years.

The cadastral map and the town plans can never be expected to have anything but a limited sale, but they might be much more largely utilised if the arrangements for sale and distribution were put upon a reasonable basis and measures taken to let the inhabitants of various localities know something of the state of publication in their own districts. If the six-inch and one-inch maps were better known it would probably lead to an increased sale of the larger maps. There is another and important step to be taken for the utilisation of cadastral surveys, which is pointed out by Sir Charles Wilson in his last report, namely, the compulsory use of the Ordnance Survey as the basis of valuation for local and imperial taxes and transactions affecting land.

Since Mr. Galton referred to the inaccessibility of the maps an even worse arrangement than that in vogue at the time has been devised for the sale of the maps. In 1882 the Office of Works closed the London depot, and, notwithstanding the opposition of Colonel Stotherd, then Director-General of the Survey, abolished the agencies throughout the kingdom, handing over the business of the sale of maps to Her Majesty's Stationery Office. This transfer was made on the ground that an undivided responsibility and control would be secured, and from the intimate relations of the Stationery Office with publishers the sales would be increased. The Stationery Office, however, apparently had no intention of taking the responsibility, for they straightway appointed Mr. Stanford sole agent for England at 33⅓ per cent commission, the Government to pay the cost of carriage from Southampton. In 1886 tenders were asked for a contract as sole agent for ten years on these terms. Mr. Stanford's offer of £600 per annum for the English agency was accepted.

Other arrangements were entered into for sole agencies in Edinburgh and Dublin.

General Sir Henry James recommended that postmasters throughout the country should be agents, a proposal which was also advocated by Mr. Galton, but the Treasury refused to appoint postmasters. Of course no new arrangement for the sale of maps can now be entered into until the expiration of the contracts.

One of the effects of the agency monopoly is that the local retailers of the maps seldom know much about the Survey, except in cases where they were formerly agents under the old system, and it is only in the larger towns that they keep any stock. In the country it is a matter of extreme difficulty to obtain information. If a resident in Carnarvonshire or Anglesea, for example, wanted a six-inch map of his neighbourhood, and was successful in obtaining it in ten days' time, he would have shown himself to be a man of energy and resource. For the absence of an intelligible guide to its publications the Department presumedly is responsible. The official catalogue is a bewildering maze. The index maps, excepting that to the one-inch, with which it is furnished, are beneath contempt. In addition to the catalogue there is published a series of Chinese puzzles, at 2d. each, called county indices. They profess to show the sheet lines and reference numbers of the 25-inch, six-inch, and the new series one-inch scale maps, but without the assistance of a skilled interpreter are useless. Those of the counties just mentioned are fair specimens. If a would-be purchaser of some of these has finally hazarded a guess at the number of the sheets he requires, there is nothing to indicate whether they are published or not. If he requires a one-inch map, he will, sooner or later, discover that he must get another index, the sheet lines shown on the county index referring to a map which does not exist, and which may not be published for many years to come.

Something might be done if public institutions such as the central free libraries in our great towns were supplied with copies of the Ordnance Survey publications of the locality, and full explanatory particulars of their objects, purposes, and the means by which copies could be obtained.

Certainly it is high time that steps were taken to remove the obstacles which interfere with the full utilisation of the Ordnance Survey. The establishment of a revision department on an adequate footing is of first importance. This can only be done by increasing the proportion of the annual grant devoted to the revision to a sum sufficient to clear off arrears. As the cadastral survey is now nearly complete, the expenditure under that head will rapidly diminish, so that if the total vote for the survey is maintained at its present level for a few years the arrears of revision might be overtaken without addition to the present annual cost of the survey to the nation. That this will not be done unless very strong representations are made to the Government is evident from the amount of the grants of the four years since an allowance was first made for the revision and from the remarkable Treasury minute quoted above. By a thorough revision most of the defects in the maps pointed out above might be remedied, and a great national work saved from ruin for want of the proverbial ha'porth of tar.

Year.	Total vote for Survey.	Under head of Cadastral Survey.	Under head of Revision.	Cadastral Survey and Revision together.
1886-7	£258,000	£189,951	£5,000	£194,951
1887-8	230,000	149,079	15,000	164,579
1888-9	223,000	93,164	64,000*	157,164
1889-90	215,000	30,000	114,660	144,660

The following letter from Sir C. Wilson, Director-General of the Ordnance Survey, has been sent to Mr. Crook in reference to his address :—

2nd Sept., 1890.

Dear Mr. Crook,—All Government Departments are the better for criticism, especially when it comes from such a well-informed critic as yourself. The Ordnance Survey Department cannot, however, be held responsible for the obsolete character of many of the maps, or for the system under which Ordnance Survey maps are now sold to the public.

No one can be more sensible than the Director of the Survey of the pressing need for a revision of the maps, but the question is really one of money, which it is for Parliament and not for the Department to decide. I think you have under-estimated the pressure which has from time to time been brought to bear upon the Government to complete the 25-inch survey of Great Britain, and however much we may regret it, we can scarcely be surprised that the survey was pushed forward at the expense of revision. The result is that in many places revision must now be virtually a re-survey.

The present system under which Ordnance Survey maps are sold by sole agents for England and Wales, Scotland, and Ireland respectively, was adopted, as you remark, contrary to the advice of the Director of the Survey. Mr. Chaplin, however, under whom the Survey now is, stated in reply to Mr. Webb last session, that "when a favourable opportunity occurred a change in the system would be carefully considered." I believe that under a proper system the sale of the maps would be enormously increased, and exceed the sum mentioned by Sir Henry James.

I must point out one or two errors in your generally accurate paper. The six-inch map of the kingdom was completed in March last; that of Ireland has long been completed, and officially recognised as the basis for all dealings in land, and for valuation for local assessment. About one-half of the six-inch map of Ireland has been revised to date on that scale. Until recent legislation with regard to land in Ireland, the six-inch map was considered large enough for all practical purposes by those who use it, and the necessity for a 25-inch survey has only been felt during the last few years.

I do not know what you mean by a "so-called new survey" of the Northern Counties. There is a "new series" one-inch map, so called to distinguish it from the old one-inch map, which was not based on a large-scale survey as the new one is.

The complexity in the one-inch map of which you complain is a matter of opinion. No country has such an enormous amount of what may be called artificial detail, buildings, roads, railroads, enclosures, &c., as England, and it is a question of taste how much of this should be shown on the one-inch scale. We have more complaints of omissions than of want of clearness. It is impossible to please every one, and the boundaries to which you personally object are the very things which most people insist should appear on the map. They are undoubtedly found very useful but I agree with you that they do not improve the appearance of the map as a work of art.

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* The actual amount set apart for revision is nothing like so large as here shown, the survey of Lancashire and Yorkshire on the $\frac{1}{2500}$ scale having been charged to the revision account.

With regard to price, if the one-inch sheets were printed on an inferior paper from a transfer to zinc, as is done in France and Italy, they could be sold at 6d. each.

You are right as to the one-inch hill sheets of the Lake District. The originals were beautiful specimens of engraving, and there was a great demand for impressions. Unfortunately the plates were worn before the present mode of preparing matrices and duplicates was perfected, and all that could be done was to arrest the disease The plates will eventually have to be re-engraved, but this cannot be taken in hand until the new map of the south of England has been engraved. The slow progress of the new hill map is due to the difficulty of obtaining qualified engravers, and of training young men to this artistic work.

I gather from your paper that one of the faults you find with the Department is that it does not construct maps for popular requirements, such as a combination of sheets, so as to give large towns, like Leeds, with their environs on a single sheet. I think that in this you are rather ignoring the principle upon which, whether rightly or wrongly, the Ordnance Survey has always been conducted. The department is directed to make maps on certain scales, which were settled after many years of controversy, for State purposes. The construction of special maps for popular use was designedly left to private enterprise, and any attempt to compete with private firms in "catering for the public" has been discouraged. I may remind you that the Guide Book maps to which you allude are all based on the Ordnance Survey, and could not have been produced and sold at such slight cost without it. The public thus, and in many other ways, indirectly derive benefit from the great national survey.—Yours truly, C. W. WILSON.

SUPPLEMENTARY NOTE BY THE AUTHOR.

Since the above paper was read I have several times been asked to indicate more precisely the steps which should be taken to render the Ordnance Survey maps more popular and useful, and the remedies for the many defects which I showed to exist.

Whilst I think I have pretty clearly pointed to the remedies in illustrating the defects, I agree that when it is desired to reform a Government department the advocates of reform cannot too distinctly define what they want. So long as definite demands, backed by public opinion, are wanting, the officials will do no more than excuse and explain existing short-comings. I have therefore endeavoured to concisely formulate my views in the following series of recommendations:—

1. The immediate establishment of a permanent revision department with a fixed annual grant calculated on the basis of providing for the revision of the whole of the maps in a given period. The necessity of revision was recognised by the Treasury in 1882, and it was suggested that it should be constantly in progress, at such a rate as would complete the whole in fifteen years at least. A revision at intervals of fifteen years would probably suffice for the country districts, but in more populous districts it would be advisable that the interval should be less. Possibly it would be found quite as economical in these cases to keep a small force continuously at work. But whatever period be decided upon as that in which a complete revision is to be made, the enormous accumulated arrears must be dealt with. Either the revision department

must for some time be on a much larger scale than would be required had the work not been neglected for so long, or the arrears must be dealt with separately. The latter would probably be the better course, such portions of the Survey as are not more than twelve to fifteen years old being handed over to the revision department. The remainder might be dealt with as re-survey, and a vote of sufficient amount taken to enable the work to be completed in the shortest possible period. It is very important that the total amount of grant for the Survey be not further reduced until this most necessary work has been completed.

2. That the boundaries and areas of the Ordnance Survey maps be made legal boundaries and areas in England and Scotland, as they already are in Ireland, so that they may form a basis for all valuation for local or imperial assessments.

3. That steps be taken to expedite the publication of the new one-inch hill-shaded map of England and Wales, which, according to present arrangements, will not be completed until 1925. This country is, amongst the chief civilised states, almost the only one not yet possessed of a complete reasonably uniform and accurate topographical map, the component sheets of which are from surveys of approximate date. If it be impossible to train a sufficient number of engravers to insure the publication of this map within a reasonable time, some other method of producing it should be adopted.

4. An edition of the one-inch map should be printed in colours and sold at the lowest possible price.

5. Of all important towns and districts of special interest, where the position of the sheet-lines necessitates the purchase of several sheets in order to form a map of a limited area, single-sheet maps combining the necessary portions should be published both on the one-inch and six-inch scales.

6. The contouring at 25ft. vertical intervals (as in Lancashire and Yorkshire) should be completed throughout the kingdom.

7. It should be considered whether it is not practicable, in new editions of the six-inch maps, to rearrange the sheet-lines to avoid the unsatisfactory patchwork arrangement required to form a map of a district through which a county boundary runs. All partly-blank sheets should be completed by transferring the necessary complement from the contiguous county map.

8. An examination into, and revision of, the scale of prices of the various maps, with a view to removing some of the existing anomalies.

9. A concise explanation of all symbols and characteristics used to be given on the margin of sheets.

10. A new general catalogue and index to the Survey, with simple index diagram, giving date and style of map, and whether engraving, zinco, or photo-zinco, with the names of the chief places on each sheet.

11. That when the contracts for sole agencies expire the old system of country agents drawing their supplies direct from Southampton be reverted to, if no better system can be devised.

ON THE TEACHING OF GEOGRAPHY IN RUSSIA.

[Read to the Members, by Mr. HUGH ROBERT MILL, D.Sc., F.R.S.E., Wednesday, October 8th, 1890, in the Library.]

At the close of a paper on "Geographical Education in the Caucasus,"* M. Victor Dingelstedt says: "The same educational programmes obtain throughout the whole Russian empire, and even private schools are tolerated only on the condition of their formulating their programmes according to those of the Government schools. In conclusion, I may add, as a general remark, that the study of geography is not yet made attractive in our schools. Geography imparted in the manner above indicated is not liked by the pupils, and does not really evoke their love of knowledge. It only taxes their memory. Text-books of geography are written only to suit the mere memory-work of this kind of teaching." The bad character given to Russian geography books by such a distinguished authority does not deprive these works of interest to outsiders. The Russian empire is such an impressive geographical fact, stretching as it does from Western Europe to Western America in one solid mass, under one inflexible control, that even a defective text-book, merely in virtue of its widely-displaced standpoint and atmosphere, must attract the attention of educationists in this country. The difficulty of the language and, perhaps even more, the apparent uncouthness of the Russian alphabet have hitherto kept the inhabitants of Western Europe in ignorance of the geographical literature of Russia, and of the system of instruction pursued there.

During a brief visit to Russia, in June, 1890, I had an opportunity of making myself acquainted with the outlines of the system of instruction officially approved, and while frankly accepting M. Dingelstedt's judgment as to the unattractiveness of the manner of teaching, I was greatly struck by the arrangement of the subject, and still more by the interesting and ingenious nature of the diagrams employed. While I must confess that my knowledge of Russia is confined to the alphabet and geographical terms, and while I must therefore abstain from anything in the nature of criticism of style or statements, the following summaries may be relied upon as a general scheme of geography as taught in Russia.

The books† to which I wish to direct attention are all large thin octavos, printed in clear type, on very poor paper, and bound in marbled boards. They all contain wood-block maps, boldly drawn, and expressing the leading features of countries very clearly.

1. A Text-book of Geography. General summary of mathematical, physical, and political geography. Course for lower schools. By K. Smirnoff. 27th edition, corrected to 1886. St. Petersburg: Arnold, 59 Litainai, 74 pp., fourteen woodcuts and two folding maps. Price, 40 kop. = 1s. Eight pages of mathematical geography disposes of the earth as a planet, lunar phases, eclipses, tides, and the representation of latitude and longitude. Thirty-four pages are given to physical geography, that title being applied more strictly than we are in the habit of employing it, as it refers almost exclusively to the natural divisions and configuration of the globe, touching very lightly on the processes by which the configuration came into existence. An effective

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* Scot. Geog. Mag. II., 1886, p. 276.

† The books are in the Library.

diagram shows the relative extent of land and sea, distinguishing the areas of each ocean and continent, and of lowlands and highlands in the latter. The typical forms of land and sea are illustrated by a sketch map of the Crimea and Sea of Azoff. The form and distribution of mountains and rivers receive a comprehensive diagram of familiar design, showing the relative lengths of rivers, heights of mountains, altitudes and depths of great lakes in each continent. The relative sizes of lakes are also brought out, by delineating on the same projection and scale all inland sheets of water from the Caspian to the Lake of Constance. The sea is next considered, and the atmosphere with its prevailing winds and typical climate. The distribution of vegetation in relation to altitude and latitude is the subject of a most ingenious and original diagram, the heights on which are shown in feet. The remainder of the book is occupied by a summary of the governments and chief towns of Russia, and of the countries and chief towns of the several continents. Outline maps of the world in hemispheres and of Europe complete the work. These have the position of the chief countries and towns indicated by an initial or contraction, and each is prefaced by an extended table of places and populations.

2. A Text-book of Geography. Asia, Africa, America, and Australia considered physically, ethnographically, and politically. Gymnasial Course. By K. Smirnoff. 30th edition. 1890. pp. 157. Six statistical diagrams, and a folding map of each continent. Price 60 kopecks = 1s. 6d. The great proportion of space being given to Central Asia, China, and Thibet, Persia and Arabia aptly marks the difference in standpoint between the Russian and the British schoolboy. Nearly one-third of the book consists of an Appendix of notes enlarging on special resemblances or contrasts in localities, characteristic products, religions, customs, plants, animals, &c. A set of two statistical diagrams is given for Asia, Africa, and America, one being divided into rectangles proportionate to the area of the several countries, the other into spaces proportionate to the populations of the countries. The black and white maps of the continents are clear and uncrowded, and correspond in orthography with the text, a desideratum rarely if ever attained in English books.

3. Text-book of Geography. Europe considered physically, ethnographically, and politically. Gymnasial Course. By K. Smirnoff. 27th edition. Corrected 1886. pp. 137. Six statistical diagrams, and thirteen one-page maps. Price 60 kopecks = 1s. 6d. The fact that the geography of Europe in this series comes after that of Asia reminds us of the much closer relations which bind Russia to the eastern than to the western world. Consistently with this view, after a few pages devoted to general configuration, climate, production, and races of the continent, the geographical description commences with Greece at the south-east corner of Europe and works gradually north-westwards, diminishing as it goes until it ends with the British Islands, to which, however, a fair amount of space (20 pp.) is devoted. The statistical diagrams are ruled in millimetre squares, and show (1) areas, (2) populations of European states, (3) areas, (4) populations of the states of Germany, (5) areas, and (6) populations of foreign possessions of European states. Each of the principal countries, or groups of countries, is represented by two maps, a physical sketch-map naming the mountains and rivers, and a political sketch-map showing the artificial divisions and towns. A complete list—and by no means a long one—of the names, or rather contractions, on each map is printed on the page opposite, so that the pupil may make sure that he knows the positions on the map of all the places referred to in the text. The map of "Belikobritania," a term which apparently includes Ireland, is at once physical and political, and is provided with three little insets showing London, the estuary of the Thames, and the district from Manchester to Birmingham on an enlarged scale, but the whole effect is very poor. Some peculiarities of transliteration illustrate the

poverty of the Russian phonetic system, despite its thirty-six letters—Vaĭtt, Kleĭd, Uash, Tvīd, Fort, Duvr, Portsmut, Vorchester, and Gell, or Ghell, stand respectively for Wight, Clyde, Wash, Tweed, Forth, Dover, Portsmouth, Worcester, and Hull, though since Russian vowels depend for their sound on the consonant following, on the last named the *e* has the value of *w*. Taken together these three little books of Smirnoff's form a series which seem excellently adapted to impress a clear and orderly idea of the earth's surface in its physical and political aspects upon the mind of a pupil, provided that the execution of the plan were as effective as its conception.

4. Text-book of Geography. Russian Empire. Gymnasial Course. By E. A. Lebadeff. 16th edition, 1890. Corrected and enlarged. Arnold. 196pp. Small black and white map of Russian Turkestan and large folded coloured map of European Russia. Price 1 rouble = 2s. 4d. A general account of area, population and boundaries of the Russian empire is followed by 100 pages descriptive of European Russia, and 30 dealing with Russia in Asia. The book concludes with 45 very closely-printed pages on ethnography, enumerating all the chief races inhabiting the empire, and giving a brief account of each. The geographical part lays special stress on the economic conditions and natural productions of the various governments.

The remaining book appears either to be non-official, or to form an exception to M. Dingelstedt's remarks. In plan at least it reverses the arrangement to which he takes exception, and proceeds from the familiar to the unknown.

5. The Instructor in General Geography. By P. Belloch. Elementary Course, comprising preliminary ideas, description of birthplace and native country, and a review of the whole globe. 16th edition, 1887. St. Petersburg, N. P. Karbasnikoff. 108 pp. Five folding maps in colours. Price 50 kopecks = 1s. 2d. This little book struck me as so fully carrying out the modern idea of teaching geography in widening circles from the schoolroom outwards that I asked my friend, Dr. James Walker, of Edinburgh University, to be good enough to translate the preface and summary, which are here reproduced in their entirety. The first sentence is a little obscure. It may mean that the plan referred to is that in common use or that it is one theoretically useful, probably the latter. The want of either a definite or an indefinite article in the Russian language not unfrequently gives rise to such ambiguity in translation.

PREFACE.—According to the plan followed in an elementary course of general geography, attention is first given to the development of the pupil's knowledge of the immediate locality with which he is most familiar. Then, after being accustomed to representations on paper of the places he sees about him, the pupil acquires information both on the maps and practically, about the surroundings of his residence to the limits of the visible horizon. The use of maps is taught from the beginning, and after this is fully understood from the visible examples it is extended so as to afford a general knowledge of the whole fatherland. Finally, a brief review of the entire terrestrial sphere is given, adapted to serve as an introduction to more advanced courses of earth-knowledge.

SUMMARY OF CONTENTS.

THE PLAN AND MAP. 6 pp.—Making plans by eye measurement. Making plans by actual measurement. Scales. The horizon and points of the compass. Geographical maps. Questions.

DESCRIPTION OF BIRTHPLACE. 14 pp.—Description of St. Petersburg (with large-scale plan, showing the principal streets, &c., within a radius of 6 versts from the Winter Palace). Vicinity of St. Petersburg (with a map, on a scale $\frac{1}{30}$th of the previous, extending to a radius of 30 versts, and including Cronstadt, Peterhof, Tsarskoeseloe, &c.). Questions. Region of the Neva and Great Lakes (with a map, on a scale $\frac{1}{280}$th of the first, and extending to a radius of 300 versts from St. Petersburg, taking in the Onega Lake, Helsingfors, and Reval). Questions.

Description of Fatherland. 11 pp.—Description of Russia with regard to its natural conditions. Description of Russia with regard to its population. Questions (illustrated by a map of European Russia with neither scale nor degree marks, and a map of the Russian Empire with the north pole as a centre).

General World Description. 10 pp.—The globe and planisphere. Appearance and condition of the earth. Natural divisions of the earth. Form of degree, degree, net, on the globe and on maps. Latitude, longitude, and zones. Questions.

Surface of the Earth. 4 pp.—Natural divisions—continents, islands, &c. Economy of the earth—plant and animal life. Questions.

The Oceans. 13 pp.—General nature of the sea. The Atlantic Ocean and its parts. The Arctic Ocean and its parts. Questions. The Indian Ocean and its parts. The Pacific Ocean and its parts. The Antarctic Ocean. Economy of the sea. Questions.

The Dry Land. 14 pp.—Distribution and outline of the land. Land surfaces—(1) low-lying, (2) high-lying—(*a*) tablelands, (*b*) mountainous tracts. Economy of mountainous regions. Questions. Water of the land. Questions.

Climate and Life. 7 pp.—Climates. Distribution of land plants. Distribution of land animals. Questions.

The People of the Globe. 6 pp.—Population of the globe. Distribution of people. Classification of people (1) by races, (2) by languages, (3) by religions, (4) by mode of life.

Artificial Divisions of the Earth's Surface. 17 pp.—Eastern Europe. Western Europe. Southern Europe. Asia. Africa. America, north and south. Australia. Questions.

Appendix. 3 pp.—On the description of a neighbourhood. The design of this book is excellent, but is not consistently carried out, as the maps only illustrate the first third, and the remaining two-thirds are without any help from maps or diagrams. The balance of the book also appears faulty, the space devoted to the earth as a whole being too great for an elementary treatise. The plan of widening outwards is peculiarly applicable to the surroundings of St. Petersburg, where the country, flat enough to afford a wide horizon, and present a map-like prospect from any tower or house roof, is admirably diversified by rivers, canals, lakes, woods, roads railways, and villages. It is remarkable that none of these books contain pictures of scenery or peoples, and more surprising, considering that the Russians are pre-eminently a picture-loving people, and value pictures for practical as well as æsthetic reasons. Even in the capital the lower classes view them as an easy and pleasing substitute for written words. Every shopkeeper advertises by pictures, not descriptions, of his wares, painted with wonderful fidelity on the shop front. The illustrated papers published in St. Petersburg are excellent, several of them vying in their treatment of wood engravings with the best magazines of the United States. It is to be inferred that Russian geographers in providing systematic and carefully-graded classbooks or school use, have not yet seen the necessity of making them attractive, an inference which M. Dingelstedt's opinion fully justifies.

The habit of viewing Asia rather than Western Europe as the nearest neighbour to Russia, evinced in schoolbooks and atlases alike, gives rise to rather amusing confusion in some cases. It happened that when we were travelling in Finland a young lady telegraphist was a fellow-passenger in the diligence. She was proceeding from St. Petersburg to a telegraph office in a remote locality, as a first instalment of the Russifying movement. She asked our Russian-speaking friend how long it had taken us to come from England. "Was it a year?" He replied, "Six days," to which she, quite certain he had made a slip in his Russian, answered confidently, "*Months*, you mean." Possibly she remembered that America lay east of the broad Russian Empire, which takes many months to travel, and that England lay a long way east of America, and forgetting the short cut the other way round, assumed that it must be very far off.

I must say a word in praise of the Russian school atlases. The standard one appears to be A. Ilina's Atlas for the Gymnasial Course, sold at 3·50 roubles = 8s. 6d., and containing forty-eight plates, many of them very large folding maps. There is a large folding plate of astronomical diagrams, six general one-page maps of the world, showing drainage areas and ocean currents, temperature, rainfall, races, and religions. Two beautifully clear, though small, maps of Europe show in the one case physical features by hill-shading and surface-tinting combined, the other political divisions. A large folding sheet, scale 1:12,600,000, shows the ethnography of Europe. Russia in Europe has four maps on the scale 1:7,350,000 devoted to it, showing the governments, the orography, climates, and natural products respectively (the last-named is one of the most beautiful examples of cartography we have seen). A huge sheet folded many times, gives the whole of European Russia, with political divisions, railways, and canals on the generous scale of 1:4,000,000 (about 60 miles to an inch), while inset plans of the seven largest towns garnish the corners. A detailed ethnographical map of the Russian Empire follows. There is a fair railway map of Western Europe, and then a series of inadequate sketches of European countries, usually packed two in a page, though Switzerland and the Alps receive much more space. The British Isles are dismissed in one poor little sketch, without railways, on the scale of 1:6,800,000. Two general maps of Asia and one of India, on a small scale, are dwarfed by a physical map of Russian Central Asia, and a grand folding sheet on the scale of 1:10,500,000, showing the whole Russian Empire in its political divisions. The other continents have two small maps each, North America getting a third to show the United States. Central America is shown on a large scale, crossed by no less than five railways from sea to sea. At the end there are four sheets giving plans and sections of all the connecting canals in Russia.

In atlas and textbooks much attention is devoted to ethnography, the extraordinarily composite character of the races subject to the Tsar being always kept in mind. Longitudes are reckoned from the meridian of Pulkova for the Russian maps, with that of Ferro inserted in the margin. Most of the others have Ferro as the prime meridian, and one only has the longitude from Greenwich inserted.

Dr. Nansen's Next Expedition.—As various erroneous statements have been made with regard to Dr. Nansen's Arctic expedition, the London *Times* gives the following account of what has actually been arranged: Dr. Nansen's desire is to leave Norway in February, 1892, but it is doubtful whether the special vessel which is being built will be ready by that time. Outside of Norway not a farthing has been contributed by anyone. The expedition is purely Norwegian, and will remain so. The Norwegian Government contribute 200,000 kroner; King Oscar, 20,000; twelve private individuals (all Norwegians except one Englishman, who has lived in Christiania for many years), 90,000; in all, 310,000, equal to $86,000. That, Dr. Nansen believes, will be sufficient. The ship, of course, is being specially constructed for the peculiar conditions which exist between the New Siberian islands and the Pole. Dr. Nansen will be accompanied by probably not more than eight young men, all as stalwart and strong in physique as himself, and all equally confident of success.—*Goldthwaite's Geographical Magazine, April, 1891.*

THE MEDITERRANEAN, PHYSICAL AND HISTORICAL.

(See Map.)

Address by Lieutenant-Colonel Sir R. LAMBERT PLAYFAIR, K.C.M.G., H.M. Consul-General in Algeria, President of the Geographical Section of the British Association.

When the unexpected honour was proposed to me of presiding over your deliberations, I felt some embarrassment as to the subject of my address. Geography as a science, and the necessity of encouraging a more systematic study of it, had been treated in an exhaustive manner during previous meetings. The splendid discoveries of Stanley and the prolonged experiences of Emin have been amply illustrated by the personal narrative of the former. The progress of geography during the past year has been fully detailed in the annual address of the President of the Royal Geographical Society in June last; so that it would be a vain and presumptuous endeavour for me to compress these subjects into the limits of an opening address. Closely connected with them are the magnificent experiments for opening out Africa which are being made by our merchant princes, amongst whom the name of Sir William Mackinnon stands pre-eminent, and by our missionary societies of various churches, all acting cordially in unison, and sinking, in the dark continent, the differences and heart-burnings which divide Christianity at home. I have thought it better, however, not to discuss matters so closely connected with political questions which have not yet passed into the realm of history.

In my perplexity I applied for the advice of one of the most experienced geographers of our Society, whose reply brought comfort to my mind. He reminded me that it was generally the custom for presidents of sections to select subjects with which they were best acquainted, and added, "What more instructive and captivating subject could be wished than 'The Mediterranean, Physical and Historical?'"

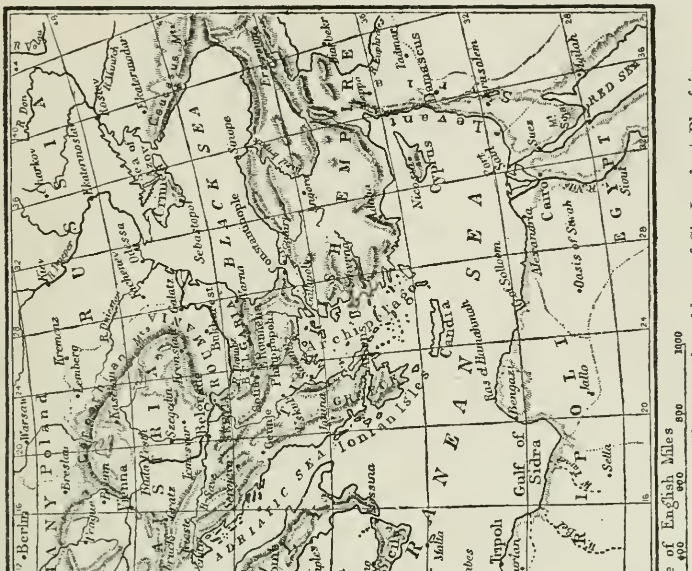
For nearly a quarter of a century I have held an official position in Algeria, and it has been my constant delight to make myself acquainted with the islands and shores of the Mediterranean, in the hope of being able to facilitate the travels of my countrymen in that beautiful part of the world.

I cannot pretend to throw much new light on the subject, and I have written so often about it already that what I have to say may strike you as a twice-told tale; nevertheless, if you will permit me to descend from the elevated platform occupied by more learned predecessors, I should like to speak to you in a familiar manner of this "great sea," as it is called in sacred Scripture, the *Mare Internum* of the ancients, "our sea," *Mare nostrum*, of Pomponius Mela.

Its shores include about three million square miles of the richest country on the earth's surface, enjoying a climate where the extremes of temperature are unknown, and with every variety of scenery, but chiefly consisting of mountains and elevated plateaux. It is a well-defined region of many parts, all intimately connected with each other by their geographical character, their geological formation, their flora, fauna, and the physiognomy of the people who inhabit them. To this general statement there are two exceptions, namely, Palestine, which belongs rather to the tropical countries lying to the east of it, and so may be dismissed from our subject, and the Sahara, which stretches to the south of the Atlantic region—or region of the Atlas—but approaches the sea at the Syrtis, and again to the eastward of the Cyrenaica, and in which Egypt is merely a long oasis on either side of the Nile.

The Mediterranean region is the emblem of fertility and the cradle of civilisation, while the Sahara—Egypt, of course, excepted—is the traditional panther's skin of sand, dotted here and there with oases, but always representing sterility and barbarism. The sea is in no sense, save a political one, the limit between them; it is a mere gulf, which, now bridged by steam, rather unites than separates the two shores. Civilisation never could have existed if this inland sea had not formed the junction between the surrounding continents, rendering the coasts of each easily accessible whilst modifying the climate of its shores.

THE MEDITERRANEAN.



Sketch map, by permission of Messrs. George Philip & Son, to illustrate the address of Sir Lambert Playfair.

The Atlas range is a mere continuation of the south of Europe. It is a long strip of mountain land, about 200 miles broad, covered with splendid forests, fertile valleys, and in some places arid steppes, stretching eastward, from the ocean to which it has given its name. The highest point is in Morocco, forming a pendant to th Sierra Nevada of Spain ; thence it runs, gradually decreasing in height, through Algeria and Tunisia ; it becomes interrupted in Tripoli ; and it ends in the beautiful green hills of the Cyrenaica, which must not be confounded with the oases of the Sahara, but is an island detached from the eastern spurs of the Atlas, in the ocean of the desert.

In the eastern part the flora and fauna do not essentially differ from those of Italy ; in the west they resemble those of Spain. One of the noblest of the Atlantic conifers (the *Abies pinsapo*) is found also in the Iberian peninsula, and nowhere else in the world, and the valuable alfa grass or esparto (*Stipa tenacissima*), from which a great part of our paper is now made, forms one of the principal articles of export from Spain, Portugal, Morocco, Algeria, Tunisia, and Tripoli. On both sides of the sea the former plant is found on the highest and most inaccessible mountains, amongst snows which last during the greater part of the year, and the latter from the sea level to an altitude of 5,000 feet, but in places where the heat and drought would kill any other plant, and in undulating land where water cannot lodge.

Of the 3,000 plants found in Algeria, by far the greater number are natives of Southern Europe, and less than 100 are peculiar to the Sahara. The macchie or maquis of Algeria in no way differs from that of Corsica, Sardinia, and other places. It consists of lentisk, arbutus, myrtle, cistus, tree-heath, and other Mediterranean shrubs. If we take the commonest plant found on the southern shores of the Mediterranean, the dwarf palm (*Chamœrops humilis*), we see at once how intimately connected is the whole Mediterranean region, with the exception of the localities I have before indicated. This palm still grows spontaneously in the south of Spain and in some parts of Provence, in Corsica, Sardinia and the Tuscan Archipelago, in Calabria and the Ionian Islands, on the continent of Greece, and in several of the islands in the Levant, and it has only disappeared from other countries as the land has been brought under regular cultivation. On the other hand, it occurs neither in Palestine, Egypt, nor in the Sahara.

The presence of European birds may not prove much, but there are mammalia, fish, reptiles, and insects common to both sides of the Mediterranean. Some of the larger animals, such as the lion, panther, jackal, &c., have disappeared before the march of civilisation in the one continent, but have lingered, owing to Mohammedan barbarism, in the other. There is abundant evidence of the former existence of these and of the other large mammals which now characterise tropical Africa, in France, Germany, and Greece. It is probable that they only migrated to their present habitat after the upheaval of the great sea which in Eocene times stretched from the Atlantic to the Indian Ocean, making Southern Africa an island continent like Australia. The original fauna of Africa, of which the lemur is a distinctive type, is still preserved in Madagascar, which then formed part of it.

The fish fauna is naturally the most conclusive evidence as to the true line of separation between Europe and Africa. We find the trout in the Atlantic region and in all the snow-fed rivers falling into the Mediterranean ; in Spain, Italy, Dalmatia ; it occurs in Mount Olympus, in rivers of Asia Minor, and even in the Lebanon, but nowhere in Palestine south of that range, in Egypt, or in the Sahara. This fresh-water salmonoid is not exactly the same in all these localities, but is subject to considerable variation, sometimes amounting to specific distinction. Nevertheless it is a European type found in the Atlas, and it is not till we advance into the Sahara, at Tuggurt, that we come to a purely African form in the Chromidæ, which have a wide geographical distribution, being found everywhere between that place, the Nile, and Mozambique.

The presence of newts, tailed batrachians, in every country round the Mediterranean, except again in Palestine, Egypt, and the Sahara, is another example of the continuity of the Mediterranean fauna, even though the species are not the same throughout.

The Sahara is an immense zone of desert which commences on the shores of the Atlantic Ocean, between the Canaries and Cape de Verde, and traverses the whole of North Africa, Arabia, and Persia, as far as Central Asia. The Mediterranean portion of it may be said roughly to extend between the 15th and 30th degrees of north latitude.

This was popularly supposed to have been a vast inland sea in very recent times, but the theory was supported by geographical facts wrongly interpreted. It has been abundantly proved by the researches of travellers and geologists that such a sea was neither the cause nor the origin of the Libyan Desert.

Rainless and sterile regions of this nature are not peculiar to North Africa, but occur in two belts which go round the world in either hemisphere, at about similar distances north and south of the equator. These correspond in locality to the great inland drainage areas from which no water can be discharged into the ocean, and which occupy about one-fifth of the total land surface of the globe.

The African Sahara is by no means a uniform plain, but forms several distinct basins containing a considerable extent of what may almost be called mountain land. The Hoggar Mountains, in the centre of the Sahara, are 7,000 feet high, and are covered during three months with snow. The general average may be taken at 1,500. The physical character of the region is very varied. In some places, such as Tiout, Moghrar, Touat, and other oases in or bordering on Morocco, there are well-watered valleys, with fine scenery and almost European vegetation, where the fruits of the north flourish side by side with the palm tree. In others there are rivers like the Oued Guir, an affluent of the Niger, which the French soldiers, who saw it in 1870, compared to the Loire. Again, as in the bed of the Oued Rir, there is a subterranean river, which gives a sufficient supply of water to make a chain of rich and well-peopled oases equal in fertility to some of the finest portions of Algeria. The greater part of Sahara, however, is hard and undulating, cut up by dry watercourses, such as the Igharghar which descends to the Chott Melghigh, and almost entirely without animal or vegetable life.

About one-sixth of its extent consists of dunes of moving sand, a vast accumulation of detritus washed down from more northern and southern regions—perhaps during the glacial epoch—but with no indication of marine formation. These are difficult and even dangerous to traverse, but they are not entirely destitute of vegetation. Water is found at rare but well-known intervals, and there is an abundance of salsolaceous plants which serves as food for the camel. This sand is largely produced by wind action on the underlying rocks, and is not sterile in itself—it is only the want of water which makes it so. Wherever water does exist, or artesian wells are sunk, oases of great fertility never fail to follow.

Some parts of the Sahara are below the level of the sea, and here are formed what are called *chotts* or *sebkhas*, open depressions without any outlets, inundated by torrents from the southern slopes of the Atlas in winter and covered with a saline efflorescence in summer. This salt by no means proves the former existence of an inland sea. It is produced by the concentration of the natural salts, which exist in every variety of soil, washed down by winter rains, with which the unevaporated residue of water becomes saturated.

Sometimes the drainage, instead of flooding open spaces and forming chotts, finds its way through the permeable sand till it meets impermeable strata below it, thus forming vast subterranean reservoirs where the artesian well daily works as great miracles as did Moses's rod of yore at Meribah. I have seen a column of water thrown up into the air equal to 1,300 metres per diem, a quantity sufficient to redeem 1,800 acres of land from sterility and to irrigate 60,000 palm trees. This seems to be the true solution of the problem of an inland sea—a sea of verdure and fertility caused by the multiplication of artesian wells, which never fail to bring riches and prosperity in their train.

The climate of the Sahara is quite different from that of what I have called the Mediterranean region, where periodical rains divide the year into two seasons. Here, in many places, years elapse without a single shower; there is no refreshing dew at night, and the winds are robbed of their moisture by the immense continental extents over which they blow. There can be no doubt that it is to these meteorological, and not to geological, causes that the Sahara owes its existence.

Reclus divides the Mediterranean into two basins, which, in memory of their history, he calls the Phœnician and the Carthaginian, or the Greek and Roman seas, more generally known to us as the Eastern and Western Basins, separated by the island of Sicily.

If we examine the submarine map of the Mediterranean, we see that it must at one time have consisted of two enclosed or inland basins, like the Dead Sea. The western one is separated from the Atlantic by the Strait of Gibraltar, a shallow ridge, the deepest part of which is at its eastern extremity, averaging about 300 fathoms; while on the west, bounded by a line from Cape Spartel to Trafalgar, it varies from 50 to 200 fathoms. Fifty miles to the west of the Strait the bottom suddenly sinks down to the depths of the Atlantic, while to the east it descends to the general level of the Mediterranean, from one to two thousand fathoms.

The Western is separated from the Eastern Basin by the isthmus, which extends between Cape Bon, in Tunisia, and Sicily, known as the Adventure Bank, on which there is not more than from 30 to 250 fathoms. The depth between Italy and Sicily is insignificant, and Malta is a continuation of the latter, being only separated from it by a shallow patch of from 50 to 100 fathoms; while to the east and west of this bank the depth of the sea is very great. These shallows cut off the two basins from all but superficial communication.

The configuration of the bottom shows that the whole of this strait was at one time continuous land, affording free communication for land animals between Africa and Europe. The Palæontological evidence of this is quite conclusive. In the caves and fissures of Malta, amongst river detritus, are found three species of fossil elephants, a hippopotamus, a gigantic dormouse, and other animals which could never have lived in so small an island. In Sicily, remains of the existing elephant have been found, as well as the *Elephas antiquus*, and two species of hippopotamus, while nearly all these and many other animals of African type have been found in the pliocene deposits and caverns of the Atlantic region.

The rapidity with which such a transformation might have occurred can be judged by the well-known instance of Graham's Shoal, between Sicily and the island of Pantellaria. This, owing to volcanic agency, actually rose above the water in 1832, and for a few weeks had an area of 3,240 feet in circumference and a height of 107 feet.

The submersion of this isthmus no doubt occurred when the waters of the Atlantic were introduced through the Strait of Gibraltar. The rainfall over the entire area of the Mediterranean is certainly not more than 30 inches, while the evaporation is at least twice as great; therefore, were the Strait to be once more closed, and were there no other agency for making good this deficiency, the level of the Mediterranean would sink again till its basins became restricted to an area no larger than might be necessary to equalise the amount of evaporation and precipitation. Thus not only would the strait between Sicily and Africa be again laid dry, but the Adriatic and Ægean Seas also, and a great part of the Western Basin.

The entire area of the Mediterranean and Black Seas has been estimated at upwards of a million square miles, and the volume of the rivers which are discharged into them at 226 cubic miles. All this and much more is evaporated annually. There are two constant currents passing through the Strait of Gibraltar, superimposed on each other. The upper and most copious one flows in from the Atlantic at a rate of nearly three miles an hour, or 140,000 cubic metres per second, and supplies the difference between the rainfall and evaporation, while an undercurrent of warmer water, which has undergone concentration by evaporation, is continually flowing out at about half the above rate of movement, getting rid of the excess of salinity, even thus, however, leaving the Mediterranean salter than any other part of the ocean except the Red Sea.

A similar phenomenon occurs at the eastern end, where the fresher water of the Black Sea flows as a surface current through the Dardanelles, and the salter water of the Mediterranean pours in below it.

The general temperature of the Mediterranean from a depth of 50 fathoms down to the bottom is almost constantly 56°, whatever may be its surface elevation. This is a greater contrast to that of the Atlantic, which at a similar depth is at least 3° colder, and which at 1,000 fathoms sinks to 40°.

This fact was of the greatest utility to Dr. Carpenter in connection with his investigations regarding currents through the Strait, enabling him to distinguish with precision between Atlantic and Mediterranean water.

For all practical purposes the Mediterranean may be accepted as being, what it is popularly supposed to be, a tideless sea, but it is not so in reality. In many places there is a distinct rise and fall, though this is more frequently due to winds and currents than to lunar attraction. At Venice there is a rise of from one to two feet in spring tides, according to the prevalence of winds up or down the Adriatic, but in that sea itself the tides are so weak that they can hardly be recognised, except during the prevalence of the Bora, our old friend *Boreas*, which generally raises a surcharge along the coast of Italy. In many straits and narrow arms of the sea there is a periodical flux and reflux, but the only place where tidal influence, properly so called, is unmistakably observed is in the Lesser Syrtis, or Gulf of Gabes. There the tide runs at the rate of two or three knots an hour, and the rise and fall varies from three to eight feet. It is most marked and regular at Djerba, the Homeric island of the Lotophagi. One must be careful in landing there in a boat, so as not to be left high and dry a mile or two from the shore. Perhaps the companions of Ulysses were caught by the receding tide, and it was not only a banquet of dates, the "honey-sweet fruit of the lotus, or the potent wine which is made from it, which made them forgetful of their homeward way."

The Gulf of Gabes naturally calls to mind the proposals which were made a few years ago for inundating the Sahara, and so restoring to the Atlantic region the insular condition which it is alleged to have had in prehistoric times. I will not allude to the English project for introducing the waters of the Atlantic from the west coast of Africa; that does not belong to my subject. The French scheme advocated by Commandant Roudaire, and supported by M. de Lesseps, was quite as visionary and impracticable.

To the south of Algeria and Tunis there exists a great depression stretching westward from the Gulf of Gabes to a distance of about 235 miles, in which are several *chotts* or salt lakes, sometimes only marshes, and in many places covered with a saline crust strong enough to bear the passage of camels. Commandant Roudaire proposed to cut through the isthmuses which separated the various chotts, and so prepare their basins to receive the waters of the Mediterranean. This done, he intended to introduce the sea by a canal, which should have a depth of one metre below low-water level.

This scheme was based on the assumption that the basin of the chotts had been an inland sea within historic times; that, little by little, owing to the difference between the quantity of water which entered and the amount of evaporation and absorption, this interior sea had disappeared, leaving the chotts as an evidence of the former condition of things; that, in fact, this was none other than the celebrated Lake Triton, the position of which has always been a puzzle to geographers.

This theory, however, is untenable; the isthmus of Gabes is not a mere sandbank. There is a band of rock between the sea and the basin of the chotts, through which the former never could have penetrated in modern times. It is much more probable that Lake Triton was the large bight between the island of Djerba and the mainland on the shores of which are the ruins of the ancient city of Meninx, which, to judge by the abundance of Greek marble found there, must have carried on an important commerce with the Levant.

The scheme has now been entirely abandoned. Nothing but the mania for cutting through isthmuses all over the world which followed the brilliant success achieved at Suez can explain its having been started at all. Of course, no mere mechanical operation is impossible in these days, but the mind refuses to realise the possibility of vessels circulating in a region which produces nothing, or that so small a sheet of water in the immensity of the Sahara could have any appreciable effect in modifying the climate of its shores.

The Eastern Basin is much more indented and cut up into separate seas than the Western one. It was therefore better adapted for the commencement of commerce and navigation. Its high mountains were landmarks for the unpractised sailor, and its numerous islands and harbours afforded shelter for his frail barque, and so facilitated communication between one point and another.

The advance of civilisation naturally took place along the axis of this sea, Phœnicia, Greece, and Italy being successively the great nurseries of human knowledge and progress. Phœnicia had the glory of opening out the path of ancient commerce, for its position in the Levant gave it a natural command of the Mediterranean, and its people sought the profits of trade from every nation which had a seaboard on the three continents washed by this sea. Phœnicia was already a nation before the Jews entered the Promised Land, and when they did so they carried on inland traffic as middlemen to the Phœnicians. Many of the commercial centres on the shores of the Mediterranean were founded before Greece and Rome acquired importance in history. Homer refers to them as daring traders nearly a thousand years before the Christian era.

For many centuries the commerce of the world was limited to the Mediterranean, and when it extended in the direction of the East it was the merchants of the Adriatic, of Genoa, and of Pisa who brought the merchandise of India, at an enormous cost, to the Mediterranean by land, and who monopolised the carrying trade by sea. It was thus that the elephant trade of India, the caravan traffic through Babylon and Palmyra, as well as the Arab *kafilehs,* became united with the occidental commerce of the Mediterranean.

As civilisation and commerce extended westwards, mariners began to overcome their dread of the vast solitudes of the ocean beyond the Pillars of Hercules, and the discovery of America by Columbus, and the circumnavigation of Africa by the Portuguese, changed entirely the current of trade as well as increased its magnitude, and so relegated the Mediterranean, which had hitherto been the central sea of human intercourse, to a position of secondary importance.

Time will not permit me to enter into further details regarding the physical geography of this region, and its history is a subject so vast that a few episodes of it are all that I can possibly attempt. It is intimately connected with that of every other country in the world, and here were successively evolved all the great dramas of the past and some of the most important events of less distant ages.

As I have already said, long before the rise of Greece and Rome its shores and islands were the seat of an advanced civilisation. Phœnicia had sent out her pacific colonies to the remotest parts, and not insignificant vestiges of their handicraft still exist to excite our wonder and admiration. We have the megalithic temples of Malta, sacred to the worship of Baal, the generative god, and Ashtoreth, the conceptive goddess, of the universe. The three thousand nurhagi of Sardinia, round towers of admirable masonry, intended probably for defence in case of sudden attack, and the so-called giant graves, were as great a mystery to classical authors as they are to us at the present day. Minorca has its talayots, tumuli somewhat analogous to, but of ruder construction than, the nurhagi, more than 200 groups of which exist in various parts of the island. With these are associated subordinate constructions intended for worship—altars composed of two immense monoliths, erected in the form of a T; sacred enclosures and megalithic habitations. One type of talayot is especially remarkable, of better masonry than the others and exactly resembling inverted boats. One is tempted to believe that the Phœnicians had in view the grass habitations or *mapalia* of the Numidians described by Sallust, and had endeavoured to reproduce them in stone: *Oblonga, incurvis lateribus tecta, quasi navium carinæ sunt.*

For a long time the Phœnicians had no rivals in navigation, but subsequently the Greeks—especially the Phocians—established colonies in the Western Mediterranean, in Spain, Corsica, Sardinia, Malta, and the South of France, through the means of which they propagated not only their commerce but their arts, literature, and ideas. They introduced many valuable plants, such as the olive, thereby modifying profoundly the agriculture of the countries in which they settled. They have even left traces of their blood, and it is no doubt to this that the women of Provence owe the classical beauty of their features.

But they were eclipsed by their successors. The empire of Alexander opened out a road to India, in which, indeed, the Phœnicians had preceded him, and introduced the produce of the East into the Mediterranean, while the Tyrian colony of Carthage became the capital of another vast empire, which, from its situation, midway between the Levant and the Atlantic Ocean, enabled it to command the Mediterranean traffic.

The Carthaginians at one time ruled over territory extending along the coast from Cyrene to Numidia, besides having a considerable influence over the interior of the continent, so that the name of Africa, given to their own dominions, was gradually applied to a whole quarter of the globe. The ruling passion with the Carthaginians was the love of gain, not patriotism, and their wars were largely fought with mercenaries. It was the excellence of her civil constitution which, according to Aristotle, kept in cohesion for centuries her straggling possessions. A country feebly patriotic, which entrusts her defence to foreigners, has the seeds of inevitable decay, which ripened in her struggle with Rome, despite the warlike genius of Hamilkar and the devotion of the magnanimous Hannibal. The gloomy and cruel religion of Carthage, with its human sacrifices to Moloch and its worship of Baal under the name of Melcarth, led to a criminal code of Draconic severity and alienated it from surrounding nations. When the struggle with Rome began, Carthage had no friends. The first Punic War was a contest for the possession of Sicily, whose prosperity is even now attested by the splendour of its Hellenic monuments. When Sicily was lost by the Carthaginians, so also was the dominion of the sea, which hitherto had been uncontested. The second Punic War resulted in the utter prostration of Carthage and the loss of all her possessions out of Africa, and in 201 B.C., when this war was ended, 552 years after the foundation of the city, Rome was mistress of the world.

The destruction of Carthage after the third Punic War was a heavy blow to Mediterranean commerce. It was easy for Cato to utter his stern "*Delenda est Carthago:*" destruction is easy, but construction is vastly more difficult. Although Augustus, in his might, built a new Carthage near the site of the old city, he could never attract again the trade of the Mediterranean, which had been diverted into other channels. Roman supremacy was unfavourable to the growth of commerce, because, though she allowed unrestricted trade throughout her vast empire, and greatly improved internal communications in the subjugated countries, Rome itself absorbed the greater part of the wealth, and did not produce any commodities in return for its immense consumption, therefore Mediterranean commerce did not thrive under the Roman rule. The conquest of Carthage, Greece, Egypt, and the East, poured in riches to Rome, and dispensed for a time with the needs of productive industry, but formed no enduring basis of prosperity.

It is only in relation to the Mediterranean that I can refer to Roman history, but I must allude to the interesting episode in the life of Diocletian, who, after an anxious reign of twenty-one years in the eastern division of the empire, abdicated at Nicomedia and retired to his native province of Illyria. He spent the rest of his life in rural pleasures and horticulture at Salona, near which he built that splendid palace, within the walls of which subsequently arose the modern city of Spalato. Nothing more interesting exists on the shores of the Mediterranean than this extraordinary edifice, perhaps the largest that ever arose at the bidding of a single man; not only vast and beautiful, but marking one of the most important epochs in the history of architecture.

Though now obstructed with a mass of narrow, tortuous streets, its salient features are distinctly visible. The great temple, probably the mausoleum of the founder, has become the cathedral, and after the Pantheon at Rome there is no finer specimen of a heathen temple turned into a Christian church. Strange it is that the tomb of him whose reign was marked by such unrelenting persecution of the Christians should have been accepted as the model of those baptisteries so commonly constructed in the following centuries.

Of Diocletian's Salona, one of the chief cities of the Roman world, but little now remains save traces of the long irregular wall. Recent excavations have brought to light much that is interesting, but all of the Christian epoch, such as a large basilica which had been used as a necropolis, and a baptistry, one of those copied from the temple of Spalato, on the Mosaic payment of which can still be read the text, *Sicut cervus desiderat fontem aquarum ita anima mea ad te Deus.*

The final partition of the Roman empire took place in 365. Forty years later the barbarians of the North began to invade Italy and the South of Europe, and in 429 Genseric, at the head of his Vandal hordes, crossed over into Africa from Andalusia, a province which still bears their name, devastating the country as far as the Cyrenaica. He subsequently annexed the Balearic Islands, Corsica and Sardinia, ravaged the coasts of Italy and Sicily, and even of Greece and Illyria, but the most memorable of his exploits was the unresisted sack of Rome, whence he returned to Africa laden with treasure, and bearing the Empress Eudoxia a captive in his train.

The degenerate emperors of the West were powerless to avenge this insult, but Byzantium, though at this time sinking to decay, did make a futile attempt to attack the Vandal monarch in his African stronghold. It was not, however, till 533, in the reign of Justinian, when the successors of Genseric had fallen into luxurious habits, and had lost the rough valour of their ancestors, that Belisarius was able to break their power and take their last king a prisoner to Constantinople. The Vandal domination in Africa was destroyed, but that of the Byzantines was never thoroughly consolidated. It rested not on its own strength, but on the weakness of its enemies, and it was quite unable to cope with the next great wave of invasion which swept over the land, perhaps the most extraordinary event in the world's history, save only the introduction of Christianity.

In 647, twenty-seven years after the Hedjira of Mohammed, Abdulla ibn Saad started from Egypt for the conquest of Africa with an army of 40,000 men.

The expedition had two determining causes—the hope of plunder and the desire to promulgate the religion of El Islam. The sands and scorching heat of the desert, which had nearly proved fatal to the army of Cato, were no bar to the hardy Arabians and their enduring camels. The march to Tripoli was a fatiguing one, but it was successfully accomplished. The invaders did not exhaust their force in a vain effort to reduce its fortifications, but swept on over the Syrtic desert and north to the province of Africa, where, near the splendid city of Suffetula, a great battle was fought between them and the army of the Exarch Gregorius, in which the Christians were signally defeated, their leader killed, and his daughter allotted to Ibn ez-Zobar, who had slain her father.

Not only did the victorious Moslems overrun North Africa, but soon they had powerful fleets at sea, which dominated the entire Mediterranean, and the emperors of the East had enough to do to protect their own capitals.

Egypt, Syria, Spain, Provence, and the islands of the Mediterranean successively fell to their arms, and until they were checked at the Pyrenees by Charles Martell it seemed at one time as if the whole of Southern Europe would have been compelled to submit to the disciples of the new religion. Violent, implacable, and irresistible at the moment of conquest, the Arabs were not unjust or hard masters in countries which submitted to their conditions. Every endeavour was, of course, made to proselytise, but Christians were allowed to preserve their religion on payment of a tax, and even popes were in the habit of entering into friendly relations with the invaders. The church of St. Cyprian and St. Augustine, with its 500 sees, was indeed expunged, but five centuries after the passage of the Mohammedan army from Egypt to the Atlantic a remnant of it still existed. It was not till the 12th century that the religion and language of Rome became utterly extinguished.

The Arabs introduced a high state of civilisation into the countries where they settled. Their architecture is the wonder and admiration of the world at the present day; their irrigational works in Spain have never been improved upon; they fostered literature and the arts of peace, and introduced a system of agriculture far superior to what existed before their arrival.

Commerce discouraged by the Romans, was highly honoured by the Arabs, and during their rule the Mediterranean recovered the trade which it possessed in the time of the Phœnicians and Carthaginians. It penetrated into the Indian Archipelago and China; it travelled westward to the Niger, and to the east as far as Madagascar, and the great trade route of the Mediterranean was once more developed.

The power and prosperity of the Arabs culminated in the ninth century, when Sicily fell to their arms. It was not, however, very long before their empire began to be undermined by dissensions. The temporal and spiritual authority of the Ommiade Khalifs, which extended from Sind to Spain, and from the Oxus to Yemen, was overthrown by the Abbasides in the year 132 of the Hedjira, A.D. 750. Seven years later Spain detached itself from the Abbaside empire, a new caliphate was established at Cordova, and hereditary monarchies began to spring up in other Mohammedan countries.

The Carlovingian empire gave an impulse to the maritime power of the south of Europe, and in the Adriatic the fleets of Venice and Ragusa monopolised the traffic of the Levant. The merchants of the latter noble little republic penetrated even to our shores, and Shakspere has made the Argosy or Ragusie a household word in our language.

During the eleventh century the Christian Powers were no longer content to resist the Mohammedans; they began to turn their arms against them. If the latter ravaged some of the fairest parts of Europe, the Christians began to take brilliant revenge.

The Mohammedans were driven out of Corsica, Sardinia, Sicily, and the Balearic Islands, but it was not till 1492 that they had finally to abandon Europe, after the conquest of Granada by Ferdinand and Isabella.

About the middle of the eleventh century an event took place which profoundly modified the condition of the Mohammedan world. The Caliph Mostansir let loose a horde of nomad Arabs, who, starting from Egypt, spread over the whole of North Africa, carrying destruction and blood wherever they passed, thus laying the foundation for the subsequent state of anarchy which rendered possible the interference of the Turks.

English commercial intercourse with the Mediterranean was not unknown even from the time of the Crusade, but it does not appear to have been carried on by means of our own vessels till the beginning of the sixteenth century. In 1522 it was so great that Henry VIII. appointed a Cretan merchant, Censio de Balthazari, to be "Master, governor, protector, and consul of all and singular the merchants and others his lieges and subjects within the port, island, and country of Crete or Candia." This is the very first English consul known to history, but the first of English birth was my own predecessor in office, Master John Tipton, who, after having acted at Algiers during several years, in unofficial character, probably elected by the merchants themselves to protect their interests, was duly appointed consul by Sir William Harebone, ambassador at Constantinople in 1585, and received just such an *exequatur* from the Porte as has been issued to every consul since by the government of the country in which he resides.

Piracy has always been the scourge of the Mediterranean, but we are too apt to associate its horrors entirely with the Moors and Turks. The evil had existed from the earliest ages. Even before the Roman conquest of Dalmatia the Illyrians were the general enemies of the Adriatic. Africa under the Vandal reign was a nest of the fiercest pirates. The Venetian chronicles are full of complaints or the ravages of the corsairs of Ancona; and there is no other name but piracy for such acts of the Genoese as the unprovoked pillage of Tripoli by Ardrea Doria in 1535. To form a just idea of the corsairs of the past, it is well to remember that commerce and piracy were often synonymous terms, even among the English, up to the reign of Elizabeth. Listen to the description given by the pious Cavendish of his commercial circumnavigation of the globe: "It hath pleased Almighty God to suffer me to circumpass the whole globe of the world. . . . I navigated along the coast of

Chili, Peru, and New Spain, where I made great spoils. All the villages and towns that ever I landed at I burned and spoiled, and had I not been discovered upon the coast I had taken a great quantity of treasure," and so he concludes, "the Lord be praised for all His mercies!"

Sir William Monson, when called upon by James I. to propose a scheme for an attack on Algiers, recommended that all the maritime powers of Europe should contribute towards the expense, and participate in the gains by the sale of Moors and Turks as slaves.

After the discovery of America and the expulsion of the Moors from Spain, piracy developed to an extraordinary extent. The audacity of the Barbary corsairs seems incredible at the present day. They landed on the shores and islands of the Mediterranean, and even extended their ravages to Great Britain, carrying off all the inhabitants whom they could seize into the most wretched slavery. The most formidable of these piratical states was Algiers, a military oligarchy, consisting of a body of janissaries, recruited by adventurers from the Levant, the outcasts of the Mohammedan world, criminals and renegades from every nation in Europe. They elected their own ruler or Dey, who exercised despotic sway, tempered by frequent assassination. They oppressed without mercy the natives of the country, accumulated vast riches, had immense numbers of Christian slaves, and kept all Europe in a state bordering on subjection by the terror which they inspired. Nothing is sadder or more inexplicable than the shameful manner in which this state of things was accepted by civilised nations. Many futile attempts were made during successive centuries to humble their arrogance, but it only increased by every manifestation of the powerlessness of Europe to restrain it. It was reserved for our own countryman, Lord Exmouth, by his brilliant victory in 1816, for ever to put an end to piracy and Christian slavery in the Mediterranean. His work, however, was left incomplete, for though he destroyed the navy of the Algerines, and so rendered them powerless for evil on the seas, they were far from being humbled. They continued to slight their treaties, and to subject even the agents of powerful nations to contumely and injustice. The French took the only means possible to destroy this nest of ruffians, by the almost unresisted occupation of Algiers and the deportation of its Turkish aristocracy.

They found the whole country in the possession of a hostile people, some of whom had never been subdued since the fall of the Roman empire, and the world owes France no small debt of gratitude for having transformed what was a savage and almost uncultivated country into one of the richest as well as the most beautiful in the basin of the Mediterranean.

What has been accomplished in Algeria is being effected in Tunisia. The treaty of the Kasr-es-Saeed, which established a French protectorate there, and the military occupation of the regency, were about as high-handed and unjustifiable acts as are recorded in history; but there can be no possible doubt regarding the important work of civilisation and improvement that has resulted from them. European courts of justice have been established all over the country. The exports and imports have increased from 23 to 51 millions of francs, the revenue from 6 to 19 millions, without the imposition of a single new tax, and nearly half a million per annum is being spent on education.

Sooner or later the same thing must happen in the rest of North Africa, though at present international jealousies retard this desirable consummation. It seems hard to condemn such fair countries to continued barbarism, in the interest of tyrants who misgovern and oppress their people. The day cannot be far off when the whole southern shores of the Mediterranean will enjoy the same prosperity and civilisation as the northern coast, and when the deserts, which are the result of misgovernment and neglect, will assume the fertility arising from security and industry, and will again blossom as the rose.

It cannot be said that any part of the Mediterranean basin is still unknown, if we except the empire of Morocco. But even that country has been traversed in almost every direction during the past twenty years, and its geography and natural history have been illustrated by men of the greatest eminence—such as Gerhard Rohlfs, Monsieur Tissot, Sir Joseph Hooker, the Vicomte de Foucauld, Joseph Thomson, and numerous other travellers. The least known portion, at least on the Mediterranean coast, is the Riff country, the inhospitality of whose inhabitants has given the word "ruffian" to the English language. Even that has been penetrated by De Foucauld, disguised as a Jew, and the record of his exploration is one of the most brilliant contributions to the geography of the country which has hitherto been made.

Although, therefore, but little remains to be done in the way of actual exploration, there are many by-ways of travel comparatively little known to that class of the community with which I have so much sympathy, the ordinary British tourist. These flock every year in hundreds to Algeria and Tunis, but few of them visit the splendid Roman remains in the interior of those countries. The Cyrenaica is not so easily accessible, and I doubt whether any Englishmen have travelled in it since the exploration of Smith and Porcher in 1861.

Cyrene almost rivalled Carthage in commercial importance. The Hellenic ruins still existing bear witness to the splendour of its five great cities. It was the birthplace of many distinguished people, and among its hills and fountains were located some of the most interesting scenes in mythology, such as the Gardens of the Hesperides and the " Silent, dull, forgetful waters of Lethe."

This peninsula is only separated by a narrow strait from Greece, whence it was originally colonised. There, and indeed all over the eastern basin of the Mediterranean, are many little-trodden routes ; but the subject is too extensive. I am reluctantly compelled to restrict my remarks to the western half.

The south of Italy is more frequently traversed and less travelled in than any part of that country. Of the thousands who yearly embark or disembark at Brindisi, few ever visit the Land of Manfred. Otranto is only known to them from the fanciful descriptions in Horace Walpole's romance. The general public in this country is quite ignorant of what is going on at Taranto, and of the great arsenal and dockyard which Italy is constructing in the Mare Piccolo, an inland sea containing more than 1,000 acres of anchorage for the largest ironclads afloat, yet with an entrance so narrow that it is spanned by a revolving bridge. Even the Adriatic, though traversed daily by steamers of the Austrian Lloyd's Company, is not a highway of travel, yet where is it possible to find so many places of interest within the short space of a week's voyage, between Corfu and Trieste, as along the Dalmatian and Istrian shores, and among the islands that fringe the former, where it is difficult to realise that one is at sea at all, and not on some great inland lake ?

There is the Bocche di Cattaro, a vast rent made by the Adriatic among the mountains, where the sea flows round their spurs in a series of canals, bays, and lakes of surpassing beauty. The city of Cattaro itself, the gateway of Montenegro, with its picturesque Venetian fortress, nestling at the foot of the black mountain ; Ragusa, the Roman successor of the Hellenic Epidaurus, Queen of the Southern Adriatic, battling with the waves on her rock-bound peninsula, the one spot in all that sea which never submitted either to Venice or the Turk, and for centuries resisting the barbarians on every side, absolutely unique as a mediæval fortified town, and worthy to have given her name to the argosies she sent forth ; Spalato, the grandest of Roman monuments ; Lissa, colonised by Dionysius of Syracuse, and memorable to us as having been a British naval station from 1812 to 1814, while the French held Dalmatia ; Zara, the capital, famous for its siege by the Crusaders, interesting from an ecclesiological point of view, and venerated as the last resting-place of St. Simeon, the prophet of the *Nunc dimittis* ; Parenza, with its great Basilica ; Pola, with its noble harbour, whence Belisarius sailed forth, now the chief naval port of the Austrian empire, with its Roman amphitheatre and graceful triumphal arches; besides many other places of almost equal interest. Still further west are Corsica, Sardinia, and the Balearic Islands, all easily accessible from the coasts of France, Italy, and Spain. These ports are constantly visited by mail steamers and private yachts, yet they are but little explored in the interior.

I am tempted to linger a little over one of the places I have just mentioned, and to devote more time to a physical and historical description of Corsica than I can spare for the Mediterranean generally. It is replete with all that makes travel delightful—unequalled scenery, a brilliant climate, historical associations, and the study of a race of men who still retain their national peculiarities. The facilities for travelling are as great as can be fairly expected ; roads such as none but the French seem able to make, winding along steep coasts and over high mountains, plunging into the depths of shady valleys and amongst dark forests in search of what is so dear to a French engineer's heart, a uniform gradient, and metalled with granite so hard that in the driest weather they are free from dust. I may add that I never failed to find sufficiently good accommodation and a kindly reception in the smallest and most remote villages.

Corsica has been compared in shape to a closed hand with the index finger extended, the latter being the promontory, called Cap Corse. The island is traversed in its whole length by a chain of high mountains, the general direction of which is north and south, dividing it into two parts of nearly equal extent. Placed, as it is, in the centre of the Western Mediterranean, between the Alps and the Atlas, and with so great inequalities of surface, it presents an epitome of the whole region from the warm sea-level to the Alpine character of the interior, where the mountains rise to a height of nearly 9,000 feet, and are clothed in snow during the greater part of the year.

All the western coast, and more than two-thirds of the whole island, are of granitic formation. The central range throws out spurs towards the sea, forming on the western side numerous bays of considerable size and depth. Nothing can exceed the grandeur of the scenery on the coast, which culminates in the celebrated Calanches de Piana, a succession of stupendous granite rocks worn and hollowed out in the most fantastic manner, fearful in their forms but soft and lovely in their colouring. There are many similar rocks throughout the island, such as the Calanches d'Evisa, the Fourches d'Asinao, and the Gorge of Inzeca, where a river flows between great cliffs and amongst boulders of green serpentine, a sight never to be forgotten.

The eastern side of the island consists of primary rocks, more or less easily disintegrated, the detritus being washed down by rains, so as to form the low plains bordering that coast. As the rivers force their way through them with difficulty, marshes and lagoons are created. These are hotbeds of malarious fever in summer, dangerous even for the natives, who migrate to the hills at that season.

The forests, the great glory of the island, consist chiefly of oak, beech, birch, and the *Pinus laricio*, indigenous to Corsica, and the monarch of European conifers, which rises as straight as an arrow sometimes to a height of 120 or 150 feet.

The Castagniccia, or country of the chestnut, is an extensive and very beautiful district, especially when the trees are in full leaf. The fruit is more useful to the people who inhabit the district than even the date to the Arab. He has to cultivate his palm trees laboriously, irrigate them in summer, and pick the fruit with the greatest care. The chestnut demands no such attention; it grows spontaneously, requires no cultivation, and the fruit falls of itself when sufficiently ripe. It is the staple food of the people, who eat it in every form, even giving it to their cattle instead of grain, while the sale of the surplus furnishes them with the other necessaries of life.

After the forests the most pleasing feature in the island, and covering more than half its surface, is the macchie, or brushwood, before mentioned, spreading its delicious perfume through the air and lighting up the landscape with a blaze of colour. There is also a constant succession of wild flowers, liliaceous plants, orchids, cyclamen, and many others. In one pine wood I saw the ground carpeted with violets and primroses, while ferns, from the common bracken to the noble *Osmunda regalis*, are found everywhere.

The principal towns are Ajaccio on the south-west, a well-known winter station, the capital of the island, full of memories and memorials of Napoleon; Bastia to the north-east, the commercial capital; Calvi to the north-west, a picturesque stronghold rising high above the sea, and dominating the surrounding country. The last is one of the few places that were always faithful to the Genoese cause, and it still bears over the entrance gate the inscription *Civitas Calvi semper fidelis*. It made a desperate resistance to the English in 1794 under Hood and Nelson, who reduced it almost to a heap of ruins before it surrendered. Nelson lost his eye in the engagement. A local antiquary has tried to prove that Columbus was born here, of Genoese parents, though he left at an early age for Genoa.

Corte, in the interior of the island, the ancient feudal capital, was the chief seat of Paoli's government, as well as the headquarters of the short-lived English administration under Sir Gilbert Elliot. It is situated at the confluence of two rivers, the Restonica and the Tavignano, which descend to the plains through a series of magnificent gorges. High above the town, perched on the summit of a rock, is the picturesque citadel built in the beginning of the fifteenth century.

In the extreme south is Bonifacio, another ancient fortress, not only strange and beautiful in itself, but commanding fine views from its ramparts of Sardinia and the numerous islands on both sides of the strait.

Cargese, twenty-eight miles north of Ajaccio, is exceptionally interesting. In 1676 an emigration of about 1,000 Greeks from Maina, in the Morea, wearied with Turkish oppression, took place to Genoa, whence they were sent to Corsica. A second emigration of 400 started to join them in the following year, but they were overtaken by the Turkish fleet and massacred. The prosperity of the small colony was not of long duration, because, when the insurrection in Corsica against the Genoese broke out, the Greeks, out of gratitude to their protectors, refused to join in it. In consequence, their villages were destroyed, their lands confiscated, and their flocks driven away. They fled for refuge to Ajaccio, and there remained till the advent of the French. It was one of the first acts of Comte Marbeuf, on assuming the government of the island, to reinstate them in a new domain, and he it was who built the present town of Cargese. The inhabitants, though in full communion with the Church of Rome, still retain their Greek Liturgy, and to some extent their language, and live on the most cordial terms with their Latin neighbours.

The vendetta has always been one of the characteristic customs of Corsica, although prevailing more in some parts of the island than in others. Such feuds have been pursued with inveterate pertinacity, frequently involving whole families from one generation to another. The custom originated in times when Genoese justice was venal and corrupt, and men had to take the honour of their families into their own keeping. After having accomplished their vendetta, the "bandits," as they are called, are accustomed to take refuge in the macchie, but they are never to be confounded with robbers, and there is no instance of strangers being molested by them.

Corsica has an important ancient history, but time will not permit me to enter into this subject in any detail. One episode, however, is especially interesting. Seneca passed eight years here in exile. A tower is pointed out on the west coast of Cap Corse which is said to have served as his prison. Even the glorious views of sea and land which it commands could not compensate him for compulsory banishment from the fertile plains of Italy. He may therefore be pardoned for his petulant injustice to the physical geography of the island when he penned his celebrated complaint, thus rendered by Boswell :—

> "Corsica, whom rocks terrific bound,
> Where Nature spreads her wildest desert round,
> In vain revolving seasons cheer thy soil,
> Nor rip'ning fruits nor waving harvests smile ;
> Nor blooms the olive mid the winter drear—
> The votive olive to Minerva dear.
> See Spring returning spreads her milder reign !
> Yet shoots no herb, no verdure clothes the plain,
> No cool springs to quench the traveller's thirst
> From thy parched hills in grateful murmurs burst.
> Nor, hapless Isle ! thy barren shores around,
> Is wholesome food, fair Ceres' bounty, found.
> Nor even the last sad gift the wretched claim,
> The pile funereal and the sacred flame.
> Naught here, alas ! surrounding seas enclose,
> Naught but an exile and an exile's woes."

Nor is this the place even to summarise the modern history of the island, though nothing can be more interesting than the story of the Pisan domination, the long and tyrannical rule of the Genoese, the struggle of the islanders during four centuries to regain their independence, the mock kingdom of Theodore, the wise rule of Pasquale Paoli, the unfortunate English occupation, and the subsequent conquest of the island by France.

I have endeavoured to sketch, necessarily in a very imperfect manner, the physical character and history of the Mediterranean, to show how the commerce of the world originated in a small maritime state at its eastern extremity ; how it gradually advanced westward till it burst through the Strait of Gibraltar, and extended over seas and continents until then undreamt of, an event which deprived the Mediterranean of that commercial prosperity and greatness which for centuries had been limited to its narrow basin.

Once more this historic sea has become the highway of nations. The persistent energy and genius of two men have revolutionised navigation, opened out new and boundless fields for commerce, and it is hardly too much to say that if the Mediterranean is to be restored to its old position of importance, if the struggle for Africa is to result in its regeneration, as happened in the new world, if the dark places still remaining in the further East are to be civilised, it will be in a great measure due to Waghorn and Ferdinand de Lesseps, who developed the overland route and created the Suez Canal.

But the Mediterranean can only hope to retain its regenerated position in time of peace. Nothing is more certainly shown by past history than that war and conquest have changed the route of commerce in spite of favoured geographical positions. Babylon was conquered by Assyrians, Persians, Macedonians, and Romans, and though for a time her position on the Euphrates caused her to rise like a phœnix from her ashes, successive conquests, combined with the luxury and effeminacy of her rulers, caused her to perish. Tyre, conquered by Nebuchadnezzar and Alexander, fell as completely as Babylon had done, and her trade passed to Alexandria. Ruined sites of commercial cities rarely again become *emporia* of commerce. Alexandria is an exception, dependent on very exceptional circumstances.

The old route to the East was principally used by sailing vessels, and was abandoned for the shorter and more economical one by the Suez Canal, which now enables a round voyage to be made in sixty days, which formerly required from six to eight months. This, however, can only remain open in time of peace. It is quite possible that in the even of war the old route by the Cape may be again used, to the detriment of traffic by the Mediterranean. Modern invention has greatly economised the use of coal, and steamers, by the use of duplex and triplex engines, can run with comparatively small consumption of fuel, thus leaving a larger space for cargo. England, the great carrying power of the world, may find it more advantageous to trust to her own strength and the security of the open seas than to run the gauntlet of the numerous strategical positions in the Mediterranean, such as Port Mahon, Bizerta, and Taranto, each of which is capable of affording impregnable shelter to a hostile fleet, and though the ultimate key to the Indian Ocean is in our own hands, our passage to it may be beset with a thousand dangers. There is no act of my career on which I look back with so much satisfaction as on the share I had in the occupation of Perim, one of the most important links in that chain of coaling stations which extends through the Mediterranean to the further East, and which is so necessary for the maintenance of our naval supremacy. It is a mere islet, it is true, a barren rock, but one surrounding a noble harbour, and so eminently in its right place that we cannot contemplate with equanimity the possiblility of it being in any other hands than our own.

It is by no means certain whether exaggerated armaments are best suited for preserving peace or hastening a destructive war. The golden age of disarmament and international arbitration may not be near at hand, but it is even now talked of as a possibility.

Should the poet's prophecy or the patriot's dream be realised, and a universal peace indeed bless the world, then this sea of so many victories may long remain the harvest field of a commerce nobler than conquest.

Insalubrity of South-Eastern Madagascar.—Mr G. E. Scott Elliott has recently made a botanical trip in Madagascar from Antananarivo, the capital of the country, to Fort Dauphin, the extreme south-eastern corner of the island. While he found large parts of the interior to be very fertile and populous, he received an unfavourable impression of south-eastern Madagascar. In that part of the great island he says European colonisation could never succeed The traders along the coast manage to live in a very miserable way, and that is all. It is only the sandy and rocky parts, such as the district around Fort Dauphin, which are fairly healthy and free from fever. "The terrible existence," he says, "led by the few Creole traders on the coast leads one to hope that this country will be left entirely to the natives who may in time become a civilised and Christian people."—*Goldthwaite's Geographical Magazine, April, 1891*

REPORT OF DELEGATE TO THE BRITISH ASSOCIATION MEETING AT LEEDS IN 1890.

The meeting at Leeds this year was not a very large one, but the papers read were fairly good.

In Section E the number of papers was smaller than formerly, but the quality of them was better, in consequence of greater selection the writers were not too much limited in space.

In several other sections papers of great interest were read on subjects bearing upon Geography.

The joint-meeting was a great success, and was one of the best meetings of the sections.

Several lectures were given as usual. "Mimicry," by Mr. E. B. Poulton, M.A., and "Quartz Fibres," by Professor Boys, were exceedingly interesting.

Some of the recommendations for work by the Society are appended hereto.

The hospitality and kindness of the Yorkshire folk was conspicuous, and everything possible was done for the comfort of the members.

The Corresponding Societies' delegates had two meetings, at which several important resolutions were arrived at, and which have produced good results.

It is needful for the next delegate to Cardiff to make himself thoroughly acquainted with the work of later years, or his work in connection with the Corresponding Societies will be barren.

A list of the principal papers read in Section E is appended herewith :—

* The President's Address on the Physical and Historical Geography of the Mediterranean.

The Vertical Relief of the Land. Dr. H. R. Mill.

Railway Routes from Europe to India. Sir F. J. Goldsmid.

Sir F. J. Goldsmid's paper was intended as a supplement to one read in June, 1878, at the Royal United Service Institution, on "Communications with British India under Possible Contingencies." The main object on that occasion was to advocate the construction of a line of railway connecting the western shores of the Mediterranean with the western coast of India by a direct, convenient, and politically expedient route—a great part of which, on the western side, though *terra incognita* to the many, had chanced to come under the personal examination of the writer and one or two brother officers. After delivery of the address (repeated by request at the Royal Engineers' Institute, Chatham) a leading article and some prolonged correspondence in the *Times*, and more than one leading article in the *Daily Telegraph*, directed public attention to the subject, interest in which was enhanced by the subsequent occupation of Cyprus—practically the step recommended as an introduction to railway operations on the coast opposite Famagusta.

One part of the programme originally sketched out, however, was wanting in essential details. It was not laid down with any precision what should be the actual course taken by the through line to India when branching off from the Lower Euphrates. Surveys and reports by recent travellers have now rendered it easy to supply this link of rail, one which may be appropriately called the Baghdad-Bandar-Abbas section, or, more minutely, the Baghdad-Shiráz and Shiráz-Bandar-

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* These papers have been read to the Society, and appear in the *Journal*.

Abbas sections. As to the route from Bandar-Abbas to Karáchi on the east, and from Tripoli to Baghdad on the west, any doubts or difficulties that present themselves are already ripe for discussion, and the solution cannot be treated as dependent upon further travel and research.

It is proposed to carry the line from Baghdad through Persian Arabistan, either by way of Dizful and Shustar, continuing along the recognised track from the latter place to Bebehan; or by an alternative route down the left bank of the Tigris, and *viâ* Haweizah to Ahwaz, whence Major Wells, R.A., has furnished full details of route from his own experiences. The same officer has made, moreover, very valuable suggestions on the mode of reaching Shiráz from Bebehan. Comparing the obstacles presented in this direction with those apparent in the more northern tract of the country, he writes:—

"I think the railway engineer would prefer to take the line from Shustar *viâ* Bebehan to the Ardakhan Valley. He would find no stupendous obstacles this way, and would have wormed himself to the roof of Central Persia without crossing one of the ridges that would guard it; he would tap, too, its most fertile plains, and include Shiráz. The 7,200 feet *kotul* that lies between Ardakhan and Shiráz has no difficulties or gradients that a Fairlie engine, such as is used between Poti and Tiflis, would not surmount. Or I should recommend the trial of the valley of the Shápur river from Bushire to Nodun, where a tunnel would lead through to the river Shur or Fahliyun, which runs from Ardakhan."

On the country east and south-east of Shiráz the reports of travellers are noted, and stress is laid upon the views of Mr. Preece, of the Persian Telegraph, expressed in the following extract from his report of a journey through Daráb and Forg:—

"Should at any time the question of a railway to the Persian Gulf take tangible form, a careful survey of this route, I am convinced, will repay the projectors. As against the Shiráz-Bushire route, there can be no doubt of its greater adaptability. . . . The engineering difficulties are nearly *nil*. . . . A railway along this route would tap a large grain-growing country, and would be easy of access to the inhabitants of Yezd and Kirmán."

An alternative route is also mentioned, running south of Mr. Preece's, through Lar. It is reported on by a late French traveller, M. Kochechouart, formerly Chargé d'Affaires at the Shah's Court.

A brief notice is given of Shustar, Shiráz, and Bandar-Abbas, and the lines of traffic leading to these places. The writer brings his paper to a conclusion by expressing his great faith in the drastic remedy of the iron rail and locomotive to awaken a slumbering but active-minded people, for whom it would be a novelty of high price and usefulness. He does not, however, disguise the fact that the scheme of railway which he describes has not had its origin in the mere wish to benefit a particular nation, but rather in the intention of putting in a 900-mile link in the inevitable great line which will some day connect England with her Indian Empire, and which should be as readily available to passengers and goods as any of the more popular and successful lines at home.

* New Trade Routes into Persia. Mr. H. F. B. Lynch.
Nyasaland. Dr. Kerr Cross.
Ashanti. Dr. Freeman.
Zambesia and Lobengula. Mr. E. A. Maund.
The Commercial Geography of Africa. Mr. J. S. Keltie.
The Political Partition of Africa. Mr. A. Silva White.
The Kalahari. Mr. E. Wilkinson.
Exploration of Cilicia. Mr. J. T. Bent.

Mr. Bent's paper showed how geography, history, and anthropology are interwoven in this district—and the study of one is necessary to the understanding of the other. Mr. Bent gives an account of the Armenian fortress of Sis, and the reason for its importance during the Roupenian line of Armenian kings.

The country between Sis and Anazarba is then described, and an account given of the fortress-town of Anazarba and the rivers Jeihan, Sombaz, and Savroon.

Experiences amongst the nomad tribes, and their customs and mode of living, are then given, including the Afshars, the Bosdans, and the Circassians, who frequent this portion of the Cicilian plains during the winter months.

The country between Anazarba and Kars Bazaar is described, and this place identified with the ancient Flaviopolis.

Exploration of ruins on a spot near the Pyramus, called Bodroum, is then described, and its identification from epigraphy with the ancient Hieropolis-Castabala.

Inscriptions which show that Artemis Perasia was worshipped here, as Strabo tells us, are referred to to show that this is the Castabala which has hitherto been placed in Cappadocia, and is also the spot which Alexander the Great visited before the battle of Issos.

With notes on Osmanieh and the pass behind it leading into Syria.

Physical Geography of Brazil. Mr. J. W. Wells.
Explorations in the Argentine, Peru, and Bolivia. Mr. M. Thouars.
* The Present State of the Ordnance Survey. Mr. H. T. Crook, C.E.
Journey in the Carpathians and Ruthenia. Miss M. Dowie.

The paper by Miss Dowie dealt with her experiences among the people who inhabit the Carpathian Mountains on the eastern or Polish side. She gave a brief description of the life of these people, their work, costume, and character, and included an account of her journeys, alone, on horseback there, the mountains, and the conditions under which she was obliged to live. She concluded with some remarks upon the future of Galicia and its great natural resources in the shape of petroleum wells, salt and silver mines, together with the immense industries in connection with its woods, yet to be fully developed.

Recent Explorations in New Guinea. Mr. C. Trotter.
Spanish Honduras. Mr. W. Pilcher.
The Actual State of the Question of the Initial Meridian for the Universal Hour. Mr. C. T. de Quarenghi.
Ancient Maps of Egypt, &c. Mr. C. Whitehouse.

Mr. Whitehead said the revised (1890) map of Middle Egypt, prepared by the Intelligence Department of the War Office, shows a part of the changes effected by his own observations. A critical study of the manuscript and printed maps attached to the text of Claudius Ptolemy had enabled him to aver, as a crucial test of their authenticity, that a depression would be found to exist in the desert to the west of the Nile, to the south of the Fayoum, with its western extremity nearly south of Alexandria, due south of the Natron lakes, between the latitudes of Heracleopolis and Oxyrhinchus, or (approximately) of Beni-Suef and Maghagha, of a peculiar shape, somewhat resembling a clover leaf and stem, with remains of a Greek town at the north end of the narrow southern valley, on the east side. The physical conditions of this region have now been determined with extreme accuracy. The map exhibited received the approval of the International Jury at the Paris Exposition (1889), *medaille d'argent*, and has been used by the War Office (1890). The most important maps of the printed editions of Cl. Ptolemy, of the sixteenth and seventeenth centuries, have been reproduced in the facsimile atlas (1890) prepared with great erudition and skill by Baron A. E. Nordenskiold, translated by Mr. Clements R. Markham, C.B., F.R.S. [The maps were exhibited.] The oldest known manuscript is that of Mt. Athos—possibly of the twelfth century. [Exhibited in photographic reproduction.] The most accurate delineation of this region is in the so-called "Agnese" (Palmese), xvii. 29, A.D. 1554 (photographed by Organia). A comparison shows that the Meridis Lacus, as it was in A.D. 150, exactly corresponds to the Wadi Raiyān and Wadi Muella, with the ruins of the Deir Muellah, at the contour of high-Nile; or to that regulating reservoir, with an area of 250 square miles and a depth of 220 feet, which will be formed by putting this depression in communication with the Nile.

Mr. H. M. Stanley's identification of Ruwenzori with the Mountains of the Moon reversed this method. He found the mountains, and then examined the maps and the historical evidence. The result is the same. The existence of ancient originals from which the mediæval copies were made is no longer open to dispute. They have never been subjected to critical analysis. It is reasonable to anticipate other important additions to geographical knowledge as the result of the renewed credit which will henceforth attach to the only atlas which has reached us from ancient days.

* Geographical Teaching in Russia. Dr. H. R. Mill.

A joint-meeting of Section F and Section E was held to hear an address on the question of "Lands Still Available for European Settlement," by Mr. E. R. Ravenstein.

APPENDIX TO REPORT OF DELEGATE TO THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The following Committees were appointed by the General Committee at the Leeds Meeting in September, 1890, besides a large number not of interest, directly, to Geography.

I.—RECEIVING GRANTS OF MONEY.

Subject for Investigation or Purpose.	Members of the Committee.	Grants.
		£
The Volcanic and Seismological Phenomena of Japan.	*Chairman.*—Sir W. Thomson. *Secretary.*—Professor J. Milne. Professor W. G. Adams, Mr. J. T. Bottomley, and Professor A. H. Green.	10
Cooperating with the Scottish Meteorological Society in making Meteorological Observations on Ben Nevis.	*Chairman.*—Lord McLaren. *Secretary.*—Professor Crum Brown. Messrs. Milne-Home, John Murray, and Buchan, and Hon. R. Abercromby.	50

Subject for Investigation or Purpose.	Members of the Committee.	Grants.
		£
The Application of Photography to the Elucidation of Meteorological Phenomena.	*Chairman.*—Mr. G. J. Symons. *Secretary.*—Mr. Clayden. Professor Meldola and Mr. John Hopkinson.	5
Seasonal Variations in the Temperatures of Lakes, Rivers, and Estuaries in various parts of the United Kingdom in co-operation with the Local Societies represented on the Association.	*Chairman.*—Mr. John Murray. *Secretary.*—Dr. H. R. Mill. Professor Chrystal, Dr. A. Buchan, the Rev. C. J. Steward, the Hon. R. Abercromby, Mr. J. Y. Buchanan, Mr. David Cunningham, Mr. Isaac Roberts, Professor Fitzgerald, Dr. Sorby, and Mr. Willis Bund.	20
Recording the Position, Height above the Sea, Lithological Characters, Size, and Origin of the Erratic Blocks of England, Wales, and Ireland, reporting other matters of interest connected with the same, and taking measures for their preservation.	*Chairman.*—Professor J. Prestwich. *Secretary.*—Dr. H. W. Crosskey. Professors W. Boyd Dawkins, T. McK. Hughes, and T. G. Bonney and Messrs. C. E. De Rance, W. Pengelly, J. Plant, and R. H. Tiddeman.	1
The Collection, Preservation, and Systematic Registration of Photographs of Geological interest.	*Chairman.*—Professor J. Geikie. *Secretary.*—Mr. O. W. Jeffs. Professors Bonney, Boyd Dawkins, and V. Ball, Dr. T. Anderson, and Messrs. A. S. Reid, W. Gray, H. B. Woodward, J. E. Bedford, R. Kidston, W. W. Watts, J. W. Davis, and R. H. Tiddeman.	10
The Volcanic Phenomena of Vesuvius and its neighbourhood.	*Chairman.*—Mr. H. Bauerman. *Secretary.*—Dr. H. J. Johnston-Lavis. Messrs. F. W. Rudler and J. J. H. Teall.	10
The Circulation of the Underground Waters in the Permeable Formations of England, and the Quality and Quantity of the Waters supplied to various Towns and Districts from these Formations.	*Chairman.*—Professor E. Hull. *Secretary.*—Mr. C. E. De Rance. Dr. H. W. Crosskey, Sir D. Galton, Professors G. A. Lebour and J. Prestwich, and Messsrs. J. Glaisher, E. B. Marten, G. H. Morton, J. Parker, W. Pengelly, J. Plant, I. Roberts, C. Fox-Strangways, T. S. Stooke, G. J. Symons, W. Topley, Tylden-Wright, E. Wetherhed, and W. Whitaker.	5
To complete the investigation of the Cave at Elbolton, near Skipton, in order to ascertain whether the remains of Palæolithic Man occur in the Lower Cave earth.	*Chairman.*—Mr. J. W. Davis. *Secretary.*—Rev. E. Jones. Drs. J. Evans and J. G. Garson, and Messrs. W. Pengelly, R. H. Tiddeman, and J. J. Wilkinson.	25
Disappearance of Native Plants from their Local Habitats.	*Chairman.*—Mr. A. W. Wills. *Secretary.*—Professor W. Hillhouse. Messrs. E. W. Badger and George Claridge Druce.	5

Subject for Investigation or Purpose.	Members of the Committee.	Grants.
		£
To report on the present state of our Knowledge of the Zoology of the Sandwich Islands, and to take steps to investigate ascertained deficiencies in the Fauna.	*Chairman.*—Professor Flower. *Secretary.*—Dr. David Sharp. Dr. Blanford, Dr. Hickson, Professor Newton, Mr. Salvin, and Dr. Sclater.	100
To report on the present state of our knowledge of the Zoology and Botany of the West India Islands, and to take steps to investigate ascertained deficiencies in the Fauna and Flora.	*Chairman.*—Professor Flower. *Secretary.*—Mr. D. Morris. Mr. Carruthers, Drs. Gunther and Sclater, Mr. Thistleton-Dyer, Dr. Sharp, Mr. F. Du Cane Godman, Professor Newton, and Colonel Fielden.	100
The Geography and the Habits, Customs, and Physical Characters of the Nomad Tribes of Asia Minor and Northern Persia, and to excavate on sites of Ancient occupation.	*Chairman.*—Dr. Garson. *Secretary.*—Mr. Bent. Messrs. H. W. Bates, Bloxam, and J. Stuart Glennie, Sir Frederic Goldsmid, and Messrs. Pengelly and Rudler.	30
The Action of Waves and Currents on the Beds and Foreshores of Estuaries by means of Working Models.	*Chairman.*—Sir J. N. Douglass. *Secretary.*—Professor Osborne Reynolds. Professor Unwin and Messrs. W. Topley, E. Leader Williams, W. Shelford, G. F. Deacon, A. R. Hunt, W. H. Wheeler, W. Anderson, and H. Bamford.	150
Editing a new Edition of "Anthropological Notes and Queries."	*Chairman.*—Professor Flower. *Secretary.*—Dr. Garson. Dr. Beddoe, General Pitt-Rivers, Mr. Francis Galton, and Dr. E. B. Tylor.	50
For carrying on the Work of the Anthropometric Laboratory.	*Chairman.*—Professor Flower. *Secretary.*—Dr. Garson. Mr. Bloxam and Dr. Wilberforce Smith.	1
The Physical Characters, Languages, and Industrial and Social Condition of the North-Western Tribes of the Dominion of Canada.	*Chairman.*—Dr. E. B. Tylor. *Secretary.*—Mr. Bloxam. Sir Daniel Wilson, Dr. G. M. Dawson, and Mr. R. G. Haliburton.	200
The Habits, Customs, Physical Characteristics, and Religions of the Natives of India.	*Chairman.*—Sir William Turner. *Secretary.*—Mr. Bloxam. Professor Flower, Drs. Garson and E. B. Tylor, and Mr. H. H. Risley.	10
Corresponding Societies' Committee.	*Chairman.*—Mr. Francis Galton. *Secretary.*—Professor R. Meldola. Professor A. W. Williamson, Sir Douglas Galton, Professor Boyd Dawkins, Sir Rawson Rawson, Dr. J. G. Garson, Dr. John Evans, Mr. J. Hopkinson, Mr. W. Whitaker, Mr. G. J. Symons, General Pitt-Rivers, Mr. W. Topley, and Professor Bonney.	25

II.—NOT RECEIVING GRANTS OF MONEY.

Subject for Investigation or Purpose.	Members of the Committee.
The Rate of Erosion of the Seacoasts of England and Wales, and the influence of the Artificial Abstraction of Shingle or other material in that action.	*Chairman.*—Mr. R. B. Grantham. *Secretaries.*—Messrs. C. E. De Rance and W. Topley. Messrs. J. B. Redman, W. Whitaker, and J. W. Woodall, Maj.-Gen. Sir A. Clarke, Admiral Sir E. Ommanney, Sir J. N. Douglass, Capt. Sir G. Nares, Capt. J. Parsons, Capt. W. J. L. Wharton, Professor J. Prestwich, and Messrs. E. Easton, J. S. Valentine, and L. F. Vernon Harcourt.
To carry on Excavations at Oldbury Hill, near Ightham, in order to ascertain the existence or otherwise of Rock Shelters at that spot.	*Chairman.*—Dr. J. Evans. *Secretary.*—Mr. B. Harrison. Professors Prestwich and H. G. Seeley.
Considering the advisability and possibility of establishing in other parts of the country Observations upon the Prevalence of Earth Tremors similar to those now being made in Durham in connection with coal-mine explosions.	*Chairman.*—Mr. G. J. Symons. *Secretary.*—Mr. C. Davison. Sir. F. J. Bramwell, Mr. E. A. Cowper, Professor G. H. Darwin, Professor Ewing, Mr. Isaac Roberts, Mr. Thomas Gray, Dr. John Evans, Professors Prestwich, Hull, Lebour, Meldola, and Judd, Mr. M. Walton Brown, and Mr. J. Glaisher.
To undertake the Investigation of the sources of the River Aire, and also to test the value of the Uranin and other Dyes in investigating the Courses of Underground Streams.	*Chairman.*—Professor R. Meldola. *Secretary.*—Professor Silvanus P. Thompson. Mr. J. Birbeck, Mr. Walter Morrison, M.P., Rev. Dr. Styles, and Mr. Thomas Tate.
The Invertebrate Fauna and Cryptogamic Flora of the Fresh Waters of the British Isles.	*Chairman.*—Professor Bayley Balfour. *Secretary.*—Professor J. C. Ewart. Canon A. M. Norman, Professors J. Geikie, A. C. Haddon, T. Johnston, W. J. Sollas, and Lapworth, Dr. H. Scott, and Mr. F. E. Beddard.
To make a digest of the Observations on the Migration of Birds at Lighthouses and Light-vessels, which have been carried on by the Migration Committee of the British Association.	*Chairman.*—Professor Newton. *Secretary.*—Mr. John Cordeaux. Messrs. John A. Harvie Brown, R. M. Barrington, and W. E. Clarke, and the Rev. E. P. Knubley.
The Teaching of Science in Elementary Schools. ⁂ This includes Geography.	*Chairman.*—Dr. J. H. Gladstone. *Secretary.*—Professor H. E. Armstrong. Mr. S. Bourne, Dr. Crosskey, Mr. George Gladstone, Mr. J. Heywood, Sir J. Lubbock, Sir Philip Magnus, Professor N. Story Maskelyne, Sir H. E. Roscoe, Sir R. Temple, and Professor Silvanus P. Thompson.

Subject for Investigation or Purpose.	Members of the Committee.
Ascertaining and recording the Localities in the British Islands in which evidences of the existence of Prehistoric Inhabitants of the country are found.	*Chairman.*—Sir John Lubbock. *Secretary.*—Mr. J. W. Davis. Dr. J. Evans, Professor Boyd Dawkins, Dr. H. Munro, Messrs. Pengelly and Hicks, Professor Meldola, and Dr. Muirhead.

Resolutions referred to the Council for consideration, and action if desirable.

That the Council be requested to consider the question of watching the operation of Acts relating to Scientific and Technical Education, and to take such steps as may seem desirable for furthering the objects of those Acts.

That the Council be requested to consider whether it is not desirable to make special provision for the comprehensive consideration by the Association of questions relating to Scientific and Technical Education.

That the Council urge upon Government to take steps to hasten the completion of the Ordnance Survey and to afford the public greater facilities for the purchase of the Survey Maps.

The Name is Budapest.—*The Bulletin of the Hungarian Society of Geography* makes an appeal to writers to give the name of the capital of Hungary correctly. Up to 1872, Old Buda, Buda and Pest, which up to that time had formed distinct municipalities, were united into one town, under the name of Budapest. Eighteen years have since elapsed, but it is common to find Buda and Pest spoken of as separate towns in books, periodicals, and newspapers. "We therefore beg," says the *Bulletin*, "geographical authors and editors of periodicals to give henceforth to the capital of Hungary the name of Budapest, whatever be the language the author employs."—*Goldthwaite's Geographical Magazine, April, 1891.*

Practical Uses of Geography.—Many people of Kansas and Nebraska would have found it greatly to their advantage had they been better acquainted with geography before they made homes, at great expense of time and money, in semi-arid districts. In the last decade, thousands of emigrants went to new homes in these great states, attracted by reports of the fertility of the soil and the ease of making there a comfortable livelihood. Now, if they or their children had been properly instructed, they would have learned that through these states passes what is known as the sub-humid belt, a strip of country several degrees in width, in which, when the rainfall is below the average, it is almost impossible where irrigation is impracticable to make a blade of grass thrive. The settlers flocked in large numbers into this semi-arid belt. For the past few years, evils which anyone acquainted with the nature of the country knew was likely in any year to occur, has befallen these unfortunate pioneers. The rainfall has been decidedly below the normal, and settlers having no provision for irrigation have been forced to emigrate. This is why, during the years 1889 and 1890, Kansas has shown an actual decrease in population. Hundreds of families have left for Oklahoma and the Rocky Mountains. Thus it is seen how closely dependent the rate of increase in population is, upon geographic conditions, and the importance of being familiar with the various natural conditions and aspects of a new country before risking life, money, and time in making homes there. A little more geographic knowledge would have saved thousands who have been miserable in the semi-arid belt of Kansas and Nebraska from the great hardships which they have undergone.—*Goldthwaite's Geographical Magazine, April, 1891.*

BRITISH TRADE WITH ALGERIA, TUNIS, AND THE SAHARA.

By Mr. GUSTAV JACOBY.

[Addressed to the Members, Wednesday, November 5th, 1890,
in the Memorial Hall.]

The principal object of my address is to direct your attention to those markets in Northern Africa which are subject to the laws and regulations of foreign governments, from which our rivals are bent on ousting us, and to examine with you into those means of defence which might conduce to prevent our expulsion from the same, and, lastly, to consider with you the commercial aspects of the Anglo-French Agreement.

I.

Let us first glance at our trade with Algeria. Previous to the year 1860 the same was carried on under the French General Tariff of 1791, an inheritance of the wars of the Revolution and an embodiment of retaliatory measures, which Mons. Michel Chevalier, the great French economist, thus summed up in the *Revue des deux Mondes* of 1877, viz.: "The uniform, brief, and brutal rule of prohibition, or absolute exclusion, intensified by the auxiliary measures of preventive confiscation, venal denunciation, domiciliary visits, and, worst of all, bodily examinations, perfect insults to public morality and decency." It is not to be wondered at that British trade with Algeria was entirely in the hands of smugglers from our great Mediterranean emporii, Malta and Gibraltar.

According to our trade statistics for 1855, our imports from Algeria were valued at the insignificant sum of £19,127, and our exports to Algeria at £21,268. A fair portion of the exports to Algeria would appear already at that time to have consisted of Glasgow figured muslins, for the purpose of making turbans and women and children's garments. I now come to a most interesting epoch of British trade with Algeria, achieved by the efforts of Mr. Richard Cobden and his able assistant, my late friend Mr. Stephen Mason, M.P. for the Stirling Burghs. It is well known that Mr. Cobden's chief aim was directed towards obtaining from France an admission of the principle that no goods of British manufacture could be subjected to higher duties than 10 per cent on their value. In this he failed; but after having obtained, it is believed, a vague, verbal promise from Napoleon III. that, at a future time, this principle should be carried out, he consented to the French proposal of 15 per cent as the maximum duty, which became embodied in Article 1 as the leading maxim or basis of the Cobden treaty.

One remarkable fact in connection with the negotiations, however, is this, that the Emperor Napoleon agreed to a 10 per cent *ad valorem* duty for only *one* class of cotton goods, viz., figured lappets, the probable reason being that the Emperor had heard of this interesting branch of Scotch manufacture, due to the discovery in 1773 of the lappet wheel, a simple contrivance for regulating the "to-and-fro" movement of the needles in such a manner as to form figures very similar in style to those of the much more expensive Jacquard loom, and to produce bright and very gaudy effects which had met with a ready sale in Algeria and other Oriental countries, even when

Algiers was under the Turkish suzerainty, and, of course, Napoleon did not wish to be behind the Turks. When, about twenty years ago, I went as one of the pioneers of this country to explore Algeria commercially, I soon discovered that, owing to the undoubted adaptability of this article to the country's requirements and taste, an extraordinary development of this branch of business was possible, and by throwing the whole of my energy into it I succeeded in greatly extending the output for that country. In a minor degree, by very close observation of the prevailing taste, I developed a considerable business in other Scotch cotton fabrics, such as fine plain muslins weighing less than 3 kilos. per 100 square metres, fancy printed calicoes, jaconets, and pocket-handkerchiefs, or cotton foulards, all of which Mr. Cobden had succeeded, it is most remarkable to say, in getting admitted at 15 per cent *ad valorem.*

The heavier Manchester fabrics of plain cotton goods, grey, bleached and coloured, woven and dyed cottons, being all subjected in the Cobden treaty to specific rates calculated upon the excessively high cotton prices of 1860, were not on such a favourable footing as the Glasgow productions, and hence the great complaints which arose in Manchester later on, when cotton prices had fallen, regarding the oppressiveness of these specific duties which hampered the trade both with Algeria and France.

Manchester owes a heavy debt of gratitude o its late member, Mr. John Slagg, or the energetic and skilful advocacy of a more liberal tariff; and, for my own part, I wish to express the deep obligation which I shall always feel towards him for the assistance which he at all times accorded me in promoting this cause.

You will remember that after the war of 1870 M. Thiers re-hoisted the flag of Protection in France, and denounced the Cobden treaty, appointing commissions in order to set aside the *ad valorem* duties and replace the same with so-called specific equivalents. When Sir Louis Mallet, in April, 1877, left for Paris to negotiate the renewal of the Cobden treaty, which had until then been allowed to remain provisionally in force, I was asked to draw up a full report on the effects of the French treaty as regards cotton tissues, and had the satisfaction of being complimented by Lord Lyons, and subsequently of being appointed by a general meeting of the Glasgow Chamber of Commerce to assist as an expert in the negotiations for the renewal of the French treaty.

For many years I devoted my whole leisure to press activity for the maintenance of the treaty. Later on, I wrote the so-called "Glasgow Manifesto," signed by eighty-three of the first Glasgow firms, urging "the necessity for Her Majesty's Government of carefully avoiding to enter into negotiations with the French Government upon a basis so complicated, uncertain, hazardous, and so unprolific as this new General Tariff, and strongly recommending that the principle of a maximum *ad valorem* clause, analogous to Article 1 of the Cobden treaty, should be firmly adhered to." Mr. Slagg sent a hearty letter of approval and the Chambers of Commerce of Manchester, Bradford, Leeds, of the south of Scotland, and sixty-five associated chambers took action on the same lines.

Communications were opened with the French free-traders. M. Paul Leroy-Beaulieu, M. Chevalier's eminent son-in-law, condemned as outspokenly as myself the General Tariff Bill, pointing out "the multiplicity of the articles taxed, the superabundance of the classifications, which go to make the tariff a perfect maze *(une chinoiserie inextricable)*, and lastly, a most unjustifiable increase of so many duties."

The new duties on figured muslins, instead of being "mere equivalents," as represented, were proved by me to be increased—as regards three of the principal classes—by the almost incredible rates of 840, 1,010, and 1,250 per cent respectively.

However, I kept up my courage, because, through the experience of selling the same fabrics in Algeria, inclusive of duty paid, and in the neighbouring Barbary

States of Morocco and Tunis, exclusive of duty, I felt no difficulty in understanding this new-fangled protectionist commutation dodge. One of my acquaintances persuaded me to go to London, with the view of consulting his friend, Mr John Bright, as to the means of averting the dangers threatening Mr. Cobden's work.

Mr. Bright received me at the top of the staircase of the Reform Club. After opening the case, he asked if I were able to plead the cause successfully in the *Times* newspaper. My answer was: "I feared not. I was a commercial man, and perhaps not skilled enough to gain victory in the *Times*." Mr. Bright said: "Then, my good friend, you are not fit for the task." I suggested that we should take the Foreign Office into our confidence, and make Lord Salisbury understand the French protectionist mystification. His reply was so extremely uncomplimentary towards the latter, that I do not feel justified in repeating it.

I soon found out that the great man had not recovered from the terrible blow inflicted upon him by the death of his wife, and was not fit for any efforts at that time.

My next application was to The Right Hon. W. E. Forster, with whom I had been in correspondence on the subject. He received me in his study at Eccleston Square. A number of blue books and French official publications on the treaty lay on the table. He said, "You have tackled a great subject in which you can do infinite harm if you are not equal to it. . . . Several of my friends have spoken well of you, but I can do nothing for you until I have convinced myself, by examining you thoroughly, that you are competent for your task. . . . Will you not be offended if I examine you on these blue books?" I expressed my willingness.

Mr. Forster then cross-questioned me at considerable length, not alone with regard to Manchester and Glasgow productions, but also with respect to dress fabrics. Some points were raised where the interests of Bradford were in collision with the more important ones of Manchester and Glasgow. Mr. Forster, himself largely interested in Bradford manufactures, said: "Then Bradford must give way on this question." What large-mindedness this incident shows. After a time the blue book he held dropped to the ground. He seized my hand and said, "I am perfectly satisfied. I see that you are master of your subject, and from now consider me at your disposal whenever you please." I then broached the subject of seeing Lord Salisbury. Mr. Forster said, "By all means: he is a very clever man. I only regret that some slight differences which we have had prevent my accompanying you to see him; but I will immediately instruct a friend of mine to bring about an interview."

Next morning, I think, a messenger from the Foreign Office brought me an invitation to see the Marquis. I laid the case before him, and showed him that almost every commutation figure of the French scheme was a mystification and a piece of downright trickery. He approved of my sugestion of taking action *previous* to the passing of the General Tariff Bill, which was then before the French Parliament, with the view of letting the French Government know that if they intended to pass that bill for the purpose of creating a fresh basis for negotiating a new treaty of commerce with this country in place of the basis of the Cobden treaty, it was useless their going on with the same, as Her Majesty's Government would not enter into any negotiations on such terms.

His Lordship promised to take this proposal into serious consideration, and expressed his great satisfaction at the manner in which I had made clear to him the meaning of this web of intricate commutation figures.

I felt little hesitation as to which of the two, Mr. Forster or Mr. Bright, was possessed of greater powers of discernment in judging character, or was less liable to be ruled by the bias of party feeling.

A short time after my interview a letter arrived from the Foreign Office stating the terms on which I was to go to Paris in the name of the Glasgow Chamber of Commerce, and backed up by letters of recommendation to Lord Lyons in order to open the eyes of the French Government.

No sooner had this letter arrived than a base intrigue on the part of a jealous permanent official of the Foreign Office, commenced behind Lord Salisbury's back, which frustrated my mission to Paris, and no further steps were taken to prevent the General Tariff Bill passing into law.

The preliminary agreement, however, was afterwards made for the renewal of the Anglo-French commercial treaty between M. Léon Say and Earl Granville, on the basis of "An amelioration of the *status quo*, in the sense of the development of commercial relations." Subsequently M. Léon Say was disavowed and recalled. The day previous to the arrival of the French negotiators in London I received a remarkable letter from the French General Consul, inviting me to a private meeting of the French negotiators immediately after their arrival in London.

The late M. Mariani, some time afterwards French Ambassador to Italy, who died at Rome recently, opened the conversation by defending the withdrawal of M. Léon Say's promises, quoting, as precedents, the negotiations of the Treaty of Westphalia, and so forth. My answer was very brief. I said, "If you have come to plead in this fashion before our ministers, I recommend you to return straight home to Paris, and assure your ministers that no negotiation is possible on such grounds. I could not pretend," I said, "to reply to your arguments, as I am not a diplomatist, but merely a commercial expert, but I feel sure that your pleading will not go down with the British people. M. Léon Say had promised us the amelioration of the *status quo*, and Earl Granville had accepted that promise as the basis of a new negotiation. Now, you have been sent here to plead that you will not hold to your promise. It reminds me of the Milanese, who said to the Emperor Barbarossa, "You had certainly our oath, but remember, we did not swear that we would keep it.'" M. Mariani took no offence at my rebuke—on the contrary, he seemed to admire its frankness. M. Amé, the Directeur Général of the French Customs, spoke next. He began by saying that he would accept the *status quo* of 1860, with the exception of a few items on which he required an increase, and produced a paper for the basis of a detailed discussion, which, by glancing over, I at once recognised as an old acquaintance, containing, as a general rule, the same commutation figures which I had already proved to be colossal exaggerations of the existing duties. After reserving in principle the right of insisting on the promised amelioration, I offered to discuss the chief classifications on that basis. I commenced by taking those articles subject to the 15% *ad valorem* duties in the Cobden treaty, and produced a number of tables, with weights and prices, showing at a glance the value of goods per kilo, thus permitting a comparison of the duty with that by weight.

When I showed M. Amé the weights and prices of figured muslins, and the ten and twelve fold increase of the proposed duties, he was quite dumbfounded. It was therefore easily seen that the author of the French general tariff had been simply an unwitting tool in the hands of the French Protectionists, and had not the slightest conception of the effects of his own propositions. I recommended to the Foreign Office an immediate rupture of the negotiations, and I had very good reasons for knowing that the French would have given way, but our ministers had not the courage to say "No," and by continuing to negotiate, in deliberate defiance of the settled policy of our leading Chambers of Commerce, and to enter into a labyrinth of interminable and intricate tarifications without having previously established a fundamental principle as a basis, they ignominiously wrecked the Cobden treaty.

Some slight amendments were brought about by the French negotiations with Belgium and Switzerland, in which we have benefitted by the "most favoured nation" clause, but the terrible blow which our trade with Algeria received through the non-renewal of the Cobden treaty is not realised by merely glancing at the official statistics, which take into account only that portion of our exports which appears in the bills of entry as direct shipments to Algerian ports, and leave out altogether that part of our exports which is shipped *via* French ports. In 1880, when I was the expert of the Glasgow Chamber of Commerce, I made a very elaborate inquiry, both in this country and in France and Algeria, and ascertained that our exports to Algeria amounted to £800,000, instead of £299,898, as is stated in our official statistics. At present the discrepancy between our official statistics and the actual amount of our exports to Algeria is not nearly so large, because those classes of goods which used to be shipped via France, where they received some subsidiary treatment, are no longer capable of being exported at all, owing to the prohibitive duties. According to our official statistics the direct shipments to Algeria amounted for the year 1888 to £252,255, and appear in the Algerian statistics at 7,654,088 francs, or £306,000. This latter sum would appear to include the whole of our shipments made via France. Compared with 1880, therefore, our exports have decreased during the last nine years not less than 62 per cent.

In comparing the imports from Algeria for the two years 1880 and 1881, amounting to £741,453 in 1880, and £750,858 in 1881, together £1,492,311, with the two years 1887 and 1888, amounting to £575,955 in 1887, and £636,371 in 1888, together £1,212,326, we find a decrease of £279,985, or nearly 20 per cent during these nine years.

It is thus manifest that the present duties are acting most oppressively upon our export trade to Algeria, and as a consequence are likewise restricting our purchases from Algeria; but the majority of the French Chambers of Commerce having clamoured for a further increase of the tariff, the French Government has just presented a new double-barrelled tariff bill, which includes a maximum and a minimum tariff. Taking the minimum tariff for a basis, I feel no hesitation whatever in affirming that, as regards the cotton industry of this country, it would be tantamount to prohibition as absolute as the general tariff of 1791, and infinitely more injurious to Lancashire and Glasgow than the McKinley Bill.

The very eccentricity of these tariffs must be looked upon as a pledge of security against any British minister in future stultifying himself by entering upon any commercial negotiations whatever with France, without having previously established a basis analagous to the first article of the Cobden treaty. The threat of putting this country under the maximum tariff is but a bugbear to frighten the uninitiated. For all practical purposes the maximum tariff is quite as good or bad as the minimum is. If you construct a weir high enough to prevent water flowing over under all circumstances, what does it matter whether or not you add to its height? The declarations of M. Jules Roche on the 29th October, before La Commission des Douanes, as to the motives for adopting the double-barrelled tariff, are instructive: "The Government desired to avoid the inconvenience arising from according the most favoured nation treatment, as in granting the same to any nation which would only give us unimportant advantages in return, *a fool's bargain* ('*un marché de dupe*') would be made."

Let our ministers beware of fool's bargains with France!

Our sales of cotton goods to France, which in 1885 amounted in round figures to £1,900,000, had dwindled down to £1,300,000 in 1888, being a decrease of 30 per cent within the space of three years, showing conclusively the oppressiveness of these duties. It would seem that on every class where they had still left us a loophole they are now determined to leave us none, and have clapped on the same additional duties. And what is worse, we are only to benefit by this minimum tariff on condition that we make further concessions to France! What further concessions can we make? Not one penny of duty do we levy upon £6,000,000 worth of silks, £5,500,000 of woollens, £1,800,000 of leather goods, £2,400,000 of butter, £1,400,000 of refined sugar, £1,100,000 of eggs. We levy duty only on £3,000,000 of wines and £1,200,000 of brandy, which are only compensations for excise duties on similar home productions. The foregoing figures represent our chief imports from France during the year 1888. During the three years 1886-1888 we imported from France £150,500,000 of merchandise, against which we only sold her about £42,000,000 worth, or, roughly speaking, a fourth part only of our purchases. Is France acting fairly towards us in thus seeking to close her market to us? Are we really so much at her mercy as many people affect to believe? What hinders us from adopting her system of a maximum and a minimum tariff, and withholding from the benefits of the latter the productions of any Power which taxes our staple goods at above 10 or, at most, 15 per cent *ad valorem?* It is not necessary to adopt any protective duties to bring this about, nor any special retaliatory measures against any one Power in particular. We have only to restore to their old level the wine duties which Mr. Cobden surrendered in 1860 to Napoleon III. in return for concessions made. We imported from France in 1888 5,644,000 gallons of wine, or about 36 per cent of the total quantity of wine imported into the United Kingdom.

France cannot now afford to blind herself to the importance of the outlet she has in Britain for her wines and spirits, or affect to be as indifferent as in 1881, when her vines were devastated by the phyloxera. She has since then wonderfully recruited her vineyards, and in addition Algeria has advanced its viticulture to a production of nearly 2,000,000 hectolitres per annum. Nor can France afford to undergo the risk of having her wines and brandies taxed at higher rates than we should accord to Italy or Spain, who are so close upon her heels already.

It appears to me that this is the most important leverage we can bring to bear effectively upon the monopolists of France and the best means of stirring the French and Algerian free traders and wine producers to decided action to prevent a disastrous rupture of our commercial relations.

But all this pleading of mine will be labour lost unless those interested at once organise themselves into a great defence league against French monopolism.

Let our Manchester Chamber of Commerce, in particular, call a special meeting of its members in order to deliberate on these affairs, and establish a new section of French and French colonial shippers. Let our operatives' unions, likewise, appoint committees of investigation. Then there could be no doubt but the French Prohibitionists would soon tremble in their shoes at the alarm which would be raised in all quarters in France and Algeria depending for their existence upon a free market in this country. There has been a great outcry in France at the vexatious formalities enacted by the McKinley Tariff Bill. In my opinion their own regulations are every bit as bad, perhaps worse. It is well known that the Rouen and Epinal manufacturers of cotton goods are the instigators of this baneful policy of prohibition in France and Algeria. Instead of endeavouring to find out those specialities for which the French cotton manufactures are best adapted, and concentrating their attention and energy upon the development of these, they have become "Jacks of all trades," trying to make all kinds, monopolise the home market, extort exorbitant prices from consumers there and in Algeria, many of whom, especially in the latter country, are in the direst straits of poverty, and lulling themselves to sleep by their too comfortable situation. The fortunes that are being made by French cotton spinners and manufacturers at the present time are simply incredible. I know this on undoubted authority. One of my personal friends, who had not been fifteen years a partner in a large concern, was lately in a position with the profits he had made to withdraw from the old firm and build a large spinning and weaving mill.

It seems to be an axiom that Algeria is a detached part of France, *une France Africaine*, rather than a colony. From this axiom all the chief errors of the French administration of Algeria have arisen. By a mere stroke of the pen the law of 17th July, 1867, which enacted a special Algerian colonial tariff, placing a considerable number of goods on the free list, was rendered null and void. Had Algeria been a self-governing colony, I feel deeply convinced that, by reason of its splendid maritime position, within 24 hours' sail from Marseilles or five days from London, by its agricultural, mineral, and other resources, its general fertility, and its incomparable climate, it would have attained a degree of prosperity with which its present situation cannot for a moment be compared. Is it creditable to France that during the period from 1830 to 1888 the total Algerian revenue was only 1,256,041,004 francs, while the Algerian expenditure amounted to 5,018,066,462 francs, showing an excess of expenditure of 3,985,684,255 francs, or over £151,000,000 sterling?

In addition, the lives of several hundred thousand soldiers have been lost in the subjugation of the Arabs, and in quelling over one hundred insurrections. Nothing proves more conclusively that the real object of the French conquest of Algeria was neither an extension of her commerce nor colonisation, but one of dominion and supremacy in the Mediterranean Sea, and of carrying out Napoleon I. and Polignac's ideas of rendering the Mediterranean a French lake—than the direction in which the French Government extended the Algerian railways from Oran eastwards to Constantine and thence to Tunis, parallel to the coast, roughly speaking, and neglecting to construct, until just recently, lines of penetration from north to south.

Let us for a moment look at Algeria from a geographical point of view. We distinguish three different zones: The Tell, the Uplands or Steppes, and the Algerian Sahara.

1. The Tell comprises the arable country, hilly, beautifully wooded, and very fertile, extending for a breadth of forty-five miles, on an average, from the Mediterranean to the foot of the mid-Algerian mountain range, embracing all the most important towns of the country.

2. The Uplands, or Steppes, covered with esparto, alfa, and similar grasses suitable for manufacturing purposes, and likewise affording pastures for its numerous herds of domestic animals. This district is interspersed with marshy lakes called Shotts or Sebkhas, and is bounded in the south by the Sahara border range, a third parallel chain, including the range extending alongside the coast, extending over a breadth of nine leagues far into Tunisian territory, and the peaks of which are, up till the end of March, covered with dazzling snow.

3. The Algerian Sahara *(petit desert)* forms a sort of ante-desert, and comprises a large number of oases—Laghuat, El Gerara, Guardaja, Tuggurt, El Wad, Uargla (the queen of oases), El Golea—and is bordered by a region of sandhills called El Erg.

Now, as a matter of course, these three zones differ in their commercial aspects as they do geographically. The same cereals, vegetables, leguminous plants, fruit, olives, vines, tobacco, bark, and cork being produced in the Tell from Oran to Tunis, no important exchange can, therefore, take place between the different localities appertaining to the Tell.

On the contrary, the inhabitants of the Uplands, who only grow grasses and farm cattle, stand in need of the products of the Tell as well as of European goods for clothing—iron implements, &c.

The Algerian Sahara, however, is a plantation region, in which is carried on the so-called *colonisation saharienne*, and what was formerly nothing but sand is being fast transformed into luxuriant gardens by means of artesian wells.

I can only refer to the district south of the ill-famed desert railway terminus, Biskra, called the Waddy R'hir, where, during the last thirty years, forty-three oases have been formed with 520,000 palm trees, and 100,000 fruit trees. The dates produced there are of a very superior quality, almost as delicious as those of the Tunisian Belud-el-Djerid, and their value is estimated at the rate of 35 centimes per kilo (about 1½d per pound), or 2½ million francs per annum, which are, to a large extent, sent to France by parcel post.

Below the whole valley of Waddy R'hir and for some hundreds of miles to the south of it, alongside the immensely wide bed of the so-called "stream" (Arabic, *Igarghar*), a subterranean current of water runs, only requiring to be reached by boring, and thus opening up the glorious perspective of a vast extension of this colonisation. It has been said that the date is for the desert what cereals are for Europe, and what rice is for India and China, and what maize is for America. It is for the inhabitants their chief food, their most certain product, the prime object of consumption and exchange (Sereziat). Dates alone, however, are not sufficiently nutritive, hence the cultivator's need of exchanging cereals.

The inhabitants of the Sahara are settled in towns, having been pushed by the Arab invaders into the Sahara, and have preserved their sedentary instincts. You will now easily understand how the succession of the different economic zones from north to south necessitates an interchange of products, and how important the establishment of railways would have been in the direction from the coast to the desert. But is it not ludicrous to see the French becoming suddenly crazy over the construction of railways connecting the Mediterranean with Lake Tchad, a distance of about 1,650 miles, and Lake Tchad with St. Louis in the Senegal, a distance of about 2,300 miles, which is running to the other extreme altogether.

I am glad to see that the Conseils Généraux of Algiers and Oran are keeping their heads cool on this fantastical scheme, for they know very well that no trade with the Sahara of any importance does or *can* exist.

The whole traffic consists of a few caravans starting from the neighbourhood of Ain-Seffra, the southernmost point of the railway in the province of Oran, carrying to the inhabitants of the oasis of Gurara, in the confederacy of Tuât, wool, butter, dried meat, cereals, beans, cheese, oil, soap and candles, and bringing back dates chiefly, which are not cultivated to any extent in the province of Oran, and in addition deerskins, spices and lemons, the total turnover for the year amounting only to a few thousand pounds.

You will notice that no European goods are carried by these caravans, for the simple reason that the Saharians, as merchants, are too shrewd to buy goods enhanced in price by duties, &c., on an average to the extent of about thirty per cent, which they can get from the caravans starting either from Morocco or from Tripoli, in both of which countries comparatively free trade exists.

The Saharian merchants are not likely to believe in that new-fangled Protectionist doctrine which the French have adopted from Prince Bismarck, according to which all Protectionist duties must be borne by the foreign producers and not by the consumers. Not only do the Algerian consumers pay for the exorbitant duties which the goods are subject to, but they also pay a profit to the British merchants who advance the capital for the payment of the duties, and who compulsorily overtake the risks of fines and chicaneries of the customs, on this outlay, in addition to that made on the goods. Imagine what a loss this means to the wealth of the French and Algerians! The further the custom-houses of Algeria are extended towards the south, with a prohibitory tariff remaining in force, the more European goods must enter into Algeria by way of smuggling, owing to the comparatively low price of the same articles outside the borders of Algeria and the much dearer market prevailing inside the Algerian frontiers. Frequently our Oran clients get a rebate of from 25 to 30 per cent, representing the duty from the British merchants upon that portion of their orders which they cause to be shipped via Gibraltar to the Spanish free-port of Melilia. From this place these goods are distributed by way of Udjda to the oases of Figig and Tuât, at a very much lower price than rules inside Algeria for the same articles. How then can any European articles be sold from Algeria to the interior of Africa by means of a trans-Saharan railway, except by first establishing free trade in Algeria itself? Yet M. Duponchel, M. Victor Largeau, M. Tarry, M. Rolland, M. Grille, and all the other originators of trans-Saharan railway schemes, represent as their chief object, the attraction of Soudan commerce to Algeria. The truth, however, has leaked out in an article in the *Economiste Français* of the 18th October, in which it is contended that "it is inexpedient for France to show too conspicuously the military and strategic character of the trans-Saharan railway by the State taking the construction into its hands, that it would be politic to leave in the shade its *rôle* of a mere instrument of domination, and that it would be more adroit to represent specially the trans-Saharan scheme as a commercial enterprise, having for its object the opening of new markets for European products to the central Soudan."

I cannot congratulate M. Leroy-Beaulieu on the diplomatic skill with which he has thus let the "cat out of the bag." Nor have I either, unfortunately, any doubt that this trans-Saharan railway scheme, destined to render more compact the African possessions of France and to crush Islamism, will be the inauguration of an epoch of bloodshed and slaughter in the interior of Africa compared with which the wars against the natives of Algeria and Tunis, and even the bloody campaigns now raging against the Moors north of the Senegal colony, will be mere child's play. Step for step, inch for inch, of that line will have to be wrested by blood and iron from the most warlike race of the world—the Tuaricks—that nation of pilots, rovers, and blackmailers of the desert, who, with their fast Mehari camels, dominate a territory five times the size of France, the descendants of the "veiled men" who invaded Spain in the year 1089, and who have upheld their independance and their Moslem faith with unsurpassed bravery and vigour since time immemorial. Or do the French really indulge in the hallucination that the Sultan of Morocco, the suzerain of the confederacy of Tuât, will voluntarily surrender that fertile belt of country, or that its fanatical inhabitants, who were goaded into a religious frenzy by General Negrier's blasphemous barbarities against the Saint of El Abiod, their holy place of pilgrimage, will receive with open arms their hereditary enemies, or that the Sultan of Turkey will sell to France Ghadames or Ghat, the strongholds of Islamism in Africa, the rocks of Moslem hope, the anchor of Moslem propaganda, as M. Edouard Blanc coolly affects to believe, to judge by his admirable paper in the last bulletin of the Paris Geographical Society?*

It is absolutely certain—from a commercial point of view—that only smugglers could be attracted to Algeria, and not legitimate Soudan traffic. Now I do not intend to pose as a prophet in commercial matters, but I ask anyone interested in this subject to look at my published reports on the French Treaty, to see with what confidence I did prophesy what has lately taken place on the Tunisian frontier of Algeria Allow me just to quote a sentence from my article, signed "Veritas," which appeared in a French newspaper, published in London, called *La Cité*, of the 7th May, 1881, in reference to the Cobden Treaty :—

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* Les Routes de l'Afrique Septentrionale au Soudan." 7 Serie, Vol. XI. 2 Trimestre, 1890.

"What can be the object of these eccentric and paradoxical propositions concerning figured muslins, when we consider that there does not exist in France any such industry as the making of lappets, not even a single loom to be protected, and that the inevitable consequence of having our goods subjected to the general tariff would be to divert once more—as happened already during the *regime* of Louis Phillippe—our Algerian trade to the ancient contraband routes, by way of Gibraltar and Morocco in the west, and Malta and Tunis in the east of Algeria, and thereby deprive the French Government of the considerable revenue which it at present derives from British imports, and turn the tribes of Algeria, Morocco, and of the Regency of Tunis, nay, even of those of the south of the Sahara, into a vast gang of smugglers, to the great prejudice of civilisation and the progress of humanity."

Indeed, a few of these gangs of smugglers have been caught descending with their camels from the mountain passes of Tunis into the plains of Algeria ; but for the many that have passed successfully along a frontier of such enormous extent, and, to all intents and purposes, unguarded by any troops or customs' guards, how few will have been caught ! Imagine what a temptation it must be for any Arab, whose daily wages often amount to only a few coppers, to cross over into Algeria, wearing upon his head a red fez, encircled by a white turban, which will cost him 'in Tunisian territory say three to four francs, and then returning with his fez alone, having left the turban behind, for which he would have found a ready sale at seven or eight francs, the price enhanced by the Algerian duties, &c., as before mentioned.

A word as to our IMPORT trade from Algeria. It consists chiefly of esparto, alfa, locust beans, barley for brewing, bark for tanning, cork, olive oil, and minerals. This trade is a monopoly in the hands of two or three British merchants, who spend most of their time in Algeria, and who charter vessels bringing coal and taking back the cargo which they have collected.

Were there a regular return service of quick steamers established between Algiers and London or Liverpool, and later on with Manchester, an immense business in fruit, mandarins, oranges, lemons, figs, dates and grapes, and in early vegetables, as well as in wines—light clarets—and many other products could be done ; but the oppressive duties upon British goods, cottons, and iron, and machinery, so necessary to an agricultural and mineral country, render our intercourse with Algeria so onerous that, instead of the business being an ever-increasing one, it is decreasing from year to year, and the economic development of Algeria cannot escape being thereby seriously handicapped, if not permanently injured. Whilst just as fast as the European colonists, owing to the enormous progress made in the culture of the vine, fruit, and early vegetables, and that of cereals, are improving their position, the natives are sinking more and more into wretched poverty. They are gradually being deprived of their lands in the Tell, where one scarcely now sees any of the nomadic tribes. They are being pushed down into the Sahara, thus strengthening the discontent and irritation there prevailing, owing to the Panislamitic agitation, which has been fostered by the Mahdist Dervishes, or Marabouts, as they are called in Algeria. Last year I witnessed in several Algerian towns scenes of plunder which were attributed to an anti-Semitic movement of the Arabs, as a good many shops belonging to Jews had been pillaged ; but, as the result of inquiries made, I feel disposed to ascribe them to the state into which poverty had driven the marauders. Such a state of things would appear to be very dangerous to the security of French rule in Algeria.

Lest you may suspect me of partiality or pessimism, allow me to refer you to the impressions of a journey by a French patriot, M. Edmond Plauchut, recorded in the October number of the *Revue des deux Mondes*, who traversed the whole of Algeria and Tunis, and even the interior from Biskra to the frontiers of Morocco. After describing the hatred of the Arabs towards the French, and expressing his deep apprehensions of new insurrections at the first outbreak of a European crisis, M. Plauchut confesses that no assimilation whatever has yet taken place between the French and the natives after sixty years of rule, and what was worse, the Spanish and Italian elements, which were overshadowing the French, could become nothing but an aggravation of French embarrassments in the future.

The commercial policy, therefore, pursued by France in Algeria of enhancing the cost, by oppressive duties, of the commonest raiments and other necessaries of life of a people miserably struggling for existence, merely to enrich a few greedy French manufacturers, is, I think, a most suicidal one.

II.—TUNIS.

I shall now take leave of Algeria, and make a few remarks regarding our trade with Tunis, which, I am glad to say, is not a decaying one like that of the former country, but one full of promise and good augury ; because, resting still upon the foundation of a sound and just treaty of commerce—that of Sir Richard Wood, of the 19th July, 1875. Clause 7 of that treaty provides that "the duties to be levied on any article of British produce and manufacture so imported shall in no case exceed one fixed rate of 8 per cent *ad valorem*, to be calculated upon the value of such merchandise at the place of landing, or a specific duty, fixed by common consent, equivalent thereto." The clause further assures to this country for all time treatment on the footing of the most favoured nation. Article 13 contains the important stipulation that agricultural implements and machines imported for private use only, and not for merchants for sale, shall enter free of duty, thus enabling British manufacturers to take orders from the agriculturists direct on exceptional terms. Article 16 stipulates the right of British citizens to establish "commercial, industrial, and banking companies, co-operative or mutual, or shareholding associations, or any other association," thus affording to British capital a magnificent field of activity in that rising country. In every line of this treaty one cannot help admiring the wisdom which has inspired its framer, his consideration for, and sympathy with, the 8,000 hard-toiling Maltese subjects of Her Majesty, and the 20,000 (now 30,000) self-sacrificing friendly Italians, to whom that country is chiefly indebted for its agricultural development and progress in civilisation, and his anxiety to prevent heavy burdens being laid upon the shoulders of these toilers by the augmentation of the prices of all necessaries through the imposition of excessive duties. What a contrast of spirit this treaty exhibits to that of the recent declarations of the French Foreign Minister, M. Ribot, who boasted that France, during the nine years of her occupation, had opened up many roads, built many bridges, established railways, and was now constructing a canal connecting the sea with the Lake of Tunis, and providing thereby a commodious harbour at Tunis itself ; but did not hesitate to declare that if France had not encountered difficulties with foreign Powers she would long ago have imposed upon the Regency a Customs Union (Union Douanière) on the basis of that now existing between herself and Algeria.

Now, what would happen if this threat should, with the consent of our Government, be carried out? As a trader largely engaged with both Algeria and Tunis, and visiting those countries frequently, I can speak with some authority on the subject. Supposing that the present French conventional tariff, which has recently been denounced by a large majority of the French Chambers of Commerce in their replies to the Conseil Supérieur du Commerce as not sufficiently protective for their national industries, nor intricate enough (as they clamour for additional subdivisions or categories of the tariff), were allowed to be imposed upon the Regency, what would be the difference of the incidence on the chief articles of cotton manufactures which we are now exporting to Tunis? On the usual Tunis qualities of T cloths, the average value of which is about 7½d. net per lb., the duty as per the conventional tariff would be at the rate of 50 francs per 100 kilos., which equals 2¼d. per lb., or 30 per cent on the value, instead of the present rate of 8 per cent. On shirtings, of which about 200,000 pieces are annually exported to the Regency, the duty would vary according to the fineness of the fabric, between 20 and 40 per cent *ad valorem.* On prints, cretonnes, and printed cotton handkerchiefs, the duty would, on an average, be tripled. On coloured woven cottons the duty would be tripled, and in some cases be quadrupled. On the important article of Glasgow lappets for turbans the duty would be, according to kind, enhanced fourfold to tenfold, as shown by the table on page 286, which also comprises the duties under the newly-proposed maximum and minimum Tariffs Bill, involving a further enormous increase of the incidence on these fabrics. These turban duties have become, as it were, a test measure for gauging the economic policy prevailing at different epochs in France, and my table strikingly proves that the French Republic, unlike Napoleon III., does not feel ashamed in matters economic of appearing behind the Turks and the Bey of Tunis.

Apart from the excessive rate of these tariffs, we have to consider the vexatious, intricate, and harassing mode of their assessment. Scarcely any bale is now opened at the Tunis Customs-house, except in the rare case when the authorities dispute the declared value on presentation of the original invoices and the authorities prefer to receive eight pieces per hundred in kind. In Algeria every bale is stripped of the hoops and opened, and every piece scrutinised; the width and length are checked and the weight taken, with a view to finding how many kilos. one hundred square metres to each article weigh, in order to settle for every piece the chief category of the tariff. Then commences the procedure of fixing the number of threads per five millimetres, in order to ascertain the subdivision; then, if a printed fabric, the number of colours or rollers by which the design was produced has to be settled. The Customs-house officials, being awarded one-half of any fine that can be imposed for any inaccuracy in declaration, are in the habit of passing every piece over the scales, well aware that, owing to the inevitable variations in the finishing of cotton goods, a few pieces can now and then be found in a bale which might afford a pretext for a penalty. Moreover, the utmost arbitrariness in classifying certain descriptions of goods is prevalent, and the most contradictory and unjustifiable decisions are formed, and confirmed on appeal by the superior authorities even. Owing to the severe handling the goods undergo, and the careless repacking of the bales destined for the interior, the sightliness of the pieces is sometimes affected to such an extent that a shipment is left for account, as no Algerian merchant will have anything to do with the clearing, and buys only on condition that the British merchant shall deliver "duty paid." Every exporter engaged in this business will verify my assertion that France is doing her best to throttle our trade entirely by these practices, and she might as well adopt frankly and openly the old Spanish system of making it a capital offence for her colonies to carry on any intercourse with foreigners.

Under the Anglo-Tunisian treaty we maintain our commercial supremacy up to this day, whatever the French officials, with their cooked statistics, may assert to the contrary. What can we think of these official statistics which put down the total value of the imports from Britain during the first six months of this year at 322,590 piastres, or £8,737? Why, *one* Manchester house alone out of the many who trade with the Regency exported to that country goods of value exceeding this amount considerably.

Her Majesty's Consul at Tunis has just rendered a report, in which a feeble attempt is made to correct the official returns of the Tunisian authorities. He states the imports from England and Malta into the Regency for 1888 at £260,000, and for 1889 at £250,000; and the exports from Tunis to England and Malta for 1888 at £100,000, and for 1889 at £120,000.

He also endeavours to correct the returns with regard to Italy, Germany, Austria, and Belgium.

I am heartily pleased at the attempt of our consul to deal with this subject, however unsuccessfully, considering that the French Free-trade newspaper, *La Gironde*, of Bordeaux, a few months ago let the "cat out of the bag" in a rather incautious way, similar to that of Mons. Leroy-Beaulieu. Referring to the Tunisian statistics, it says: "It is evident what precious as well as irrefutable arguments these statistics afford us to bring about the rupture of the Anglo-Tunisian treaty."

Now, I think that after this audacious avowal of the purpose of their dodge, it is needless to examine these statistics any further.

Her Majesty's Consul says that, with regard to cottons of British manufacture, "they will continue paramount in the Tunisian market *so long as* the present tariff of 8 per cent *ad valorem* remains in force." Now, I trust that this does not infer that, after the ignominious collapse of the negotiations regarding the surrender of the Anglo-Tunisian treaty, there is any danger of any British Minister ever consenting to an abrogation of Sir Richard Wood's treaty, which, as I show below,* is to all intents and purposes a perpetual one, and cannot be modified without the consent of Her Britannic Majesty or her heirs; and further, that we possess a formal guarantee from France by which she became surety for the observance of that engagement entered into by the Bey of Tunis.

Our consul further remarks that the trade in manufactured cottons, valued in 1888 at £165,335, and in 1889 at £134,690, consists almost wholly of Manchester goods transhipped to Tunis from Malta.

This sentence proves by its glaring incorrectness that our present consul in Tunis is not in touch with the merchants there, as I witnessed myself, or he would have learned that a very large portion of the cotton goods exported from this country were Glasgow fabrics. How would it otherwise be possible to explain the great interest and attention given by the Glasgow Chamber of Commerce to the Tunisian treaty?

For the same reasons I cannot attribute any great value to the consul's estimates of our trade with Tunis, which I feel certain has been greatly underrated. I have no hesitation in saying that if our Board of Trade, our consuls and our officials in Malta, would exert their brains a little they would experience no difficulty in arriving at a fair estimate of our trade with Tunis. I gauge the total imports and exports between Great Britain and Tunis for the year 1890 at one-half to three-quarter millions sterling, and I do not believe that I shall be far off the mark.

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* The 40th Article of the Anglo-Tunisian treaty runs thus: "In order that the two contracting parties may have the opportunity of hereafter treating and agreeing upon such other arrangements as may tend still further to the improvement of their mutual intercourse and to the advancement of the interests of their respective people, it is agreed that at any time after the expiration of seven years from the date of the present Convention of Commerce and Navigation either of the high contracting parties shall have the right to call upon the other to enter upon a revision of the same; but until such revision shall have been accomplished by common consent, and a new Convention shall have been concluded and put into operation, the present Convention shall continue and remain in full force and effect."

I inquired when in Tunis last year at many of the wholesale houses as to whether any French cottons were kept by them or had been bought at all. The result was that I found a few fine furniture sateens—certainly not more than £2,000 worth of French cotton goods—had been imported during the whole year 1889. Not one piece of greys or whites could I hear of, the large amount appearing in the Tunisian statistics evidently comprising Belgian, Swiss, German, and Austrian goods, arriving by way of Marseilles.

Taking into consideration the unsatisfactory state of jurisdiction in Tunis and the insecurity of credits in general, I am inclined to say that our cotton goods trade with that country is now being pushed to excess. Moreover, very heavy losses have been made during the last few years by Manchester merchants, owing to their trust in careless or dishonest representatives. It is no exaggeration when I state that the greater part of the commercial representatives of the Regency, as well as of Algeria, are totally unreliable and unworthy of confidence. The presence of several native merchants in our city who know so much better than we Europeans how to keep down expenses, is the cause of profits for all staple goods being cut down to the lowest point and being altogether out of proportion to the risks involved.

On the other hand, all other branches of British commerce, such as cutlery, smallwares, agricultural machinery, implements, colours and paints, and many other branches, are scandalously neglected. It is true that considerable difficulties do arise from there being no wholesale houses in existence in these classes of goods. In consequence this trade has, unfortunately for us, become the monopoly of large French bazaars or retail warehouses, several of which are branch establishments of Paris firms.

There is, too, a widespread belief—let us hope totally unfounded—that the British Government will sooner or later surrender our commercial privileges in Tunis, and of course British capitalists in consequence hesitate to found similar establishments, which would certainly very soon rival the French bazaars, which sell to the public at exorbitant prices. Unless, therefore, our ministers do their duty in speaking boldly out on this question, and inspire confidence into our capitalists to make investments in the Regency, we cannot hope that our trade will assume that development which might otherwise be attained.

It is asserted that Tunis, being a natural continuation of Algeria, cannot for any length of time remain separated from the latter by customs barriers. Long ago I pointed out to M. Paul-Leroy Beaulieu that I could see nothing at all to prevent the realisation of his pet idea of amalgamating the Algerian and Tunisian tariffs provided France chose the right method of carrying out the scheme. It is only necessary to re-establish, with suitable alterations, the law of 17th July, 1867, which enacted a special Algerian tariff, and, placing it upon the basis of 8% *ad valorem* duties, stipulating the right of exacting, with a view of guarding against false declarations, if deemed necessary, consular certificates.

An Algerian-Tunisian Zollverein would thereby be established *de facto*. No European power would desire, or, even if desirous, could, carry out any opposition to such a purely fiscal measure, established upon such a sound and equitable basis to all concerned. The customs barriers between the two neighbouring countries being no longer required could be removed, no political annexation to which foreign powers could object being implied.

III.—TUNIS AND SAHARA.

We now come to a most interesting subject, the alleged commercial connection between Tunis and the Sahara, by means of caravans, referred to in nearly all the histories of commerce, by Mr. McCulloch in his celebrated Dictionary of Commerce, by several geographical explorers, and in most handbooks on Tunisian Geography. I have visited the Regency regularly, at frequent intervals, during the last twenty years, and have never found a trace of its existence, but, to make quite sure, I recently entrusted one of my Tunisian friends—a gentleman of great experience and influence, with a special inquiry into the matter, and he reports as follows: "It is a complete error to think that any commercial relations whatever now exist between Tunis and the Sahara. That trade is now chiefly in the hands of the Tripolitans. The caravans which leave Tripoli are composed of people partly from the town of Tripoli and partly from the town of Ghadames, a place fifteen days' journey from the coast. The Tripolitans form their convoy at Tripoli, the Ghadamsans their's at their own town. They traverse the Fezzan by their respective routes, and meet together at the Turkish garrison town of Ghat or Rhat, thence pursuing their journey to the Soudan in company. At the beginning of this century the caravans, on their return from the Soudan, *did* take the direction of Tunis instead of Tripoli, but, owing to the greed of a rapacious minister of the Bey of Tunis, who levied heavy blackmail on the caravans, the Ghadamsans determined never to set foot on Tunisian soil again. The question of prevailing upon them to come back to Tunis, and even to Algeria, was lately the special object of some secret French diplomatic mission, which, lest they should awaken the Sultan's suspicions, proceeded to Ghadames by way of the Algerian Sahara.

These missions turned out complete fiascos. How could a fanatic Mussulman race, like the Ghadamsans, ever think of abandoning the territory of the Sultan, the Vicar of Mahomet, in favour of the propositions and the country of infidels? Never! Therefore I can only conclude that the whole thing is a myth.

IV.

I have now reached the last stage of my address, that of the Algerian Hinterland, recently the subject of a preliminary agreement between the Governments of this country and of France.

As a consequence of this Anglo-French agreement, it is apprehended that, at some future time, the Algerian custom-houses will be moved southward, to a place called Say, on the Niger, and to another place called Barrua, on the north-west side of Lake Tchad. With a view to cautioning the Foreign Office, I made a point of causing certain questions to be put in the House of Commons. The answers given by Sir James Fergusson have been the cause of considerable anxiety in Manchester commercial circles. In reply to a question asked by Mr. Buchanan, "as to whether the French were to have the power of including the enormous tract of north-west Africa in the tariff zone of Algeria, because such a power would operate seriously to the detriment of British trade," the Under Secretary of Foreign Affairs said, "With regard to trade, of course they could not make an agreement with France as to the limits of the duty to be charged, because it was well known that France would not go into any agreement of that nature."

Now, if you will look at a good map of the Sahara trade routes you will at once perceive that unless Her Majesty's Commissioners, who are at present in Paris, negotiating the details of this preliminary agreement, may yet succeed in obtaining the consent of France to allow the commercial highways, by which the trade from Morocco in the west and Tripoli in the east, now passes through the Sahara to the Soudan to remain open, and to sanction the right of free transit, our important trade with the Sahara and the Soudan, as well as that of other Powers who are not parties to this one-sided bargain, will be annihilated by Lord Salisbury's arrangements.

Exactly in the same longitude as Paris, directly below Algiers, is situated the important emporium and centre of Saharan commerce, Ain Salah, which lies at about an equal distance of 800 miles from Timbuctoo, Mogador, Tangiers, Algiers, and Tripoli, where the different caravans meet and barter their produce against our goods.

No caravan could pass if Algerian custom houses barred the way. Further, as the French openly declare that their aim is to unite Senegambia with Algeria, the commercial highway between the Atlantic and the western Mediterranean ports of Morocco (Mogador, Tangiers, &c.) on the one hand and the Soudan on the other, would run the risk of becoming likewise barred by any connection which France might establish between the custom houses of the Senegal and those of Algeria Again, the connection between the eastern province of Algeria and Lake Tchad would in all probability, intercept our caravan trade which passes by the two chief lines, first, that of Tripoli, Murzuk Ghat, and the Soudan, and secondly might interfere even with the so-called Birma route from Tripoli, Murzuk, Birma to Lake Tchad, as well as with the line which branches out from Murzuk to Cyrenaica and Cairo by way of Audjila. True, the Hinterland of Morocco was not specially referred to by Lord Salisbury, but in declaring his impression that the Algerian frontiers in the south were quite open, and the country between Algeria and Say was no man's land, he referred to it indirectly. One can only suppose that his lordship has been misled by French maps similar to that published in the "Proceedings of the Royal Geographical Society," of November, 1890, which, quite contrary to the best German and Keith Johnston's maps, show the Algero-Moroccan frontiers to run almost from north to south with an open Hinterland, whilst in reality an enormous fertile belt, the 400 confederated oases of Tuât, which pay tribute to and virtually recognise the suzerainty of the Sultan of Morocco, bars for a distance of five degrees, from one degree west of Greenwich to nearly four degrees east of Greenwich, a space of 350 miles in length, the exit of Algeria to the desert. The most influential French papers, and especially all the geographical reviews, have openly advocated the annexation of the confederacy of Tuât by blood and iron. The French foreign minister's bold allusion, towards the beginning of November, to France "now holding possession of the caravan routes across the Sahara," the entire trade of which is actually in our hands, is a gross anomaly, and bears out my argument.

The extent of our Morocco business, which depends for a large portion on its Saharan outlet, may be gauged from the following statistics of the imports of British cotton yarns and goods, which during the year 1888 entered the following eight Moroccan ports, paying an *ad valorem* duty of eight per cent :—

	Quantities. Packages.	Value. Francs.		Quantities. Packages.	Value. Francs.
Tangiers	2,044	3,463,000	Casablanca	1,400	2,486,540
Tetuan	—	395,170	Mazagan	1,363	2,720,000
Laraiche	766	1,084,600	Saffi	870	537,500
Rabat	872	1,807,000			
Mogador	2,140	2,695,000			15,188,810

The total imported into these eight ports amounting to 15,188,810 francs, or £607,555. In our British statistics of 1888 the total amount of British imports of *all kinds* is given as £423,842, which shows once more how misleading some of our official trade statistics are.

As regards our imports from Morocco, I can only state the amount at which they figure in British statistics, viz., £506,812.

Now, as the Anglo-French arrangement was made for the purpose of conciliating France with respect to her pretended rights in Zanzibar, it seems to me necessary to compare the extent of our Zanzibar trade with that of Morocco.

"British trade with Zanzibar is included in the return for East African native states, and as Abyssinia is excluded, these refer almost entirely to Zanzibar, and the mainland formerly belonging to it. The total export from these states, in 1888, to Great Britain amounted to £69,088, and the imports from Great Britain to £80,818. ("Statesman's Year Book, 1890.")

It is thus manifest that our trade with Zanzibar is a mere bagatelle compared with that of Morocco. It is an undoubted fact that a considerable amount of Manchester goods find their way from Morocco to the Soudan by means of the Tafilet and Tarudant caravans, or are bartered on the way at the large salt depots of Sebkha, Idjil, and at Taoudeni against salt. At the latter place an important addition to the supply of camels is made, and the journey to the Soudan, which densely-populated country is entirely destitute of salt, is continued.

I need not say what tremendous injury such interference with the existing channels of our trade would entail, and specially for our Lancashire industries ; for both the Morocco and Tripoli merchants, who have the outfitting of these "Desert Fleets" in their hands, have virtually their chief starting point in our own city. I refer to the colony of turbaned gentlemen, who form such a characteristic feature of Manchester commerce, and who are quite ignorant, it would seem, of the risks to which they may be exposed by the pending arrangements.

As regards our trade with Tripoli, I have not been able to obtain reliable statistics. Our trade statistics do not specially refer to Tripoli, and shipments from this country are mostly made *via* Malta. By a special agreement with the Turkish Government, our merchandise passing through Ghadames to the Sahara and the Soudan are subject only to a transit duty of two or three per cent, which is thus virtually free trade. Thus, whilst all other nations, even that of the Turks, are vieing with each other in the opening up of African markets, the French Republic alone gives the example of a retrograde policy, and, in fact, seems bent upon cutting up trade already established since time immemorial, and attempting to yoke the people of the Sahara and of the Soudan with burdens which they are unfit to bear.

Surely we have a right to insist that the Foreign Office will maintain the vested interests of her manufacturers and merchants against all wanton encroachments, and to act the part of vigilant guardians of British interests.

It would appear that the new-fangled doctrine of Hinterland, which surely is of a very doubtful value in international law, is only applied by our rivals for the purpose of thwarting our interests, and its privileges are systematically withheld from our nation.

I have had occasion during the last two or three days to acquaint myself with the extreme discontent prevailing amongst the West African merchants of this country regarding the pending negotiations, which are being conducted in secrecy, and without any consultation with those interested, and which they fear may result in the Hinterland of the Gold Coast in the direction of the bent of the Niger, as well as that of our Sierra Leone Coast in the direction of the Fouta Djallon, and the sources of the Niger, being abandoned to France.

It would seem that the whole of these African arrangements, instead of taking into due consideration the commercial interests of the country, have been made by our Government solely with a view of removing possible political difficulties and conflicts. Now, I yield to no one in my desire to have the ties of friendship and goodwill with France drawn closer; but I feel sure it is not by the Foreign Office sacrificing the commerce established by years of labour and expense in deference to the bullying demands of the French Chauvinists and monopolists that this desirable result will be obtained.

In spite of the lesson given to France by the Franco-German War, she now proclaims the theory of natural frontiers as applicable in Africa. Morocco is the key to the province of Oran ; Tuât is the key to the Algerian Sahara ; and Ghadames and Rhat are the keys to Tunis.

Lest anyone considers me guilty of exaggeration, I shall quote the concluding sentence of the remarkable report of M. Edouard Blanc, engineer of the French Government, entitled, “Les routes de l'Afrique septentrionale au Soudan,” in the latest “Bulletin de la Société de la Géographie.” 7 serie, Vol. XI., 2 Trimestre, 1890, p. 216 :—

“We shall retake, as far as possible by peaceful means, but with all the tenacity due to our *natural right,* the route of the 7th degree of longitude east of Paris, which passes by Ghadames and Rhât. We shall one day occupy Ghadames—we shall occupy Rhât; and under the shelter of our flag the caravans will be able to pass *freely (sic)* from the Mediterranean to the Soudan.”

An Algerian writer, M. F. Gourgeot, officer of La Légion d'Honneur, in his “Situation Politique de l'Algerie,” p. 103, says that “England, which had been in the Tunisian question benevolent, would assume a very different attitude as regards that of Tripoli, *se mettrait carrément et résolûment en travers de notre action.* Notre agression serait trop injuste à ses yeux comme aux yeux des puissances européennes.”

I sincerely trust that M. Gourgeot has hit the nail on the head, that England will plant her foot down, and keep it there, warding off all interference with established rights by means of Hinterland, or any other Quixotic heresies, and dispel once for all the notion that this country yields to the clamour of her foreign rivals.

My address having no pretension to scientific theorising, but being of an altogether practical tendency, I would suggest, in conclusion, that your Society appoint a committee of investigation and vigilance as regards the pending African negotiations, with a view of memorialising Her Majesty's Government on the necessity of protecting British commercial interests to the utmost of its power.

COMPARATIVE TABLE OF DUTIES ON 100 PIECES OF TURBANS.

Value per Piece f.o.b. Africa.	Total Value of 100 Pieces.		Nett Weight 100 pcs. Kilogrammes.	Anglo-Tunisian Treaty.	Cobden Treaty	French Conventional Tariff	French Tariff Bills, 1890.	
							Maximum Tariff	Minimum Tariff
						Per 100 Kilos.		
s. d.	£ s. d.	Francs.		8%	10%	207fr.	524·20fr.	384fr.
				Francs.	Francs.			
1 11	9 11 8	239·60	83·5	19.15	23·96	172·85	437·70	320·65
2 0½	10 4 2	255·20	93·9	20·40	25·52	194·40	492 22	360·50
2 2½	11 0 10	276	97	22·10	27·60	200·80	508·40	372·48
	Average per cent ad val.....			8%	10%	75%	189%	137°/o

NYASALAND AND AFRICAN EXPLORATION.

By the BISHOP OF MANCHESTER, Archdeacon MAPLES (of Likoma), the Rev. D. KERR CROSS (of the Free Church of Scotland Mission), and Mr. J. W. MOIR (manager of the African Lakes Company).

[Addressed to the Members in the Mayor's Parlour, Friday, Nov. 21st, 1890.]

MR. E. SOWERBUTTS read the following letter from Consul H. H. Johnston, regretting that he was unable to be present:—

Queen Anne's Mansions, St. James's Park, S.W., October 13th, 1890.

Dear Sir,—I expect by the 21st of November I shall once more be on the seas, returning to Africa. You have three such first-class authorities on the subject to address you on that night that I know I could add nothing of interest to what they will tell you, unless I trenched on the forbidden ground of politics. What little I have observed of Nyasaland I have mainly put into my *Graphic* articles.—Very truly yours, H. H. JOHNSTON.

Eli Sowerbutts, Esq., F.R.G.S.

The following letter had also been received from the Rev. W. C. Porter, of Newala:—

Newala, Sept. 3, 1890.

Dear Mr. Sowerbutts,—I have been sadly negligent in writing to friends in England this year, partly perhaps owing to the uncertainty of our communications. It rather damps one's ardour in correspondence not to know when one's letters will get off, and when one can receive any. However, I have had a little unpleasant experience, which shall be an excuse and incentive to writing by this despatch. After waiting month after month for a safe journey to the coast, and some certainty of getting to Zanzibar, I left last June for Lindi with twelve of our native boys for Kiungani, two of them teachers who had been home for a holiday. We had no trouble on the way—as we had thought might be the case—from Arabs encamped outside the town; and the chief of the German station, and the other Germans, were most hospitable and kind during the seven days of our stay there waiting for the German steamer, by which we reached Zanzibar, free of charge, on July 1. I proposed returning the end of that month by German steamer to Mikindani, wishing to try the route thence to Newala. But I could not get permission to come, either on that occasion nor again at the beginning of August, by German steamer, either to Lindi or Mikindani. So I had to use the Portuguese mail to Minengene—otherwise Palma, in Tunghi Bay. It proved a comfortable and fairly quick boat, and leaving Zanzibar on Monday, Aug. 4, about 7 a.m., we reached Minengene on Tuesday afternoon. A considerable amount of bales was landed there, for the purchase, I understood, in great measure, of india-rubber, of which there seems a fair trade in that port. The young Portuguese officer in charge of the fort received me most civilly and hospitably with supper, bed, and breakfast next morning, for which I had good cause to be the more grateful, as two Frenchmen had come for a journey up-country—one of them a M. Anzelog, who went some five years ago to examine the coal deposit on the Lujenda for the Seyyid. The custom house at Palma makes the passage of goods that way disagreeable as well as expensive. I had with me only a young boy returning to his parents from Kiungani, so had to look out for porters to Newala, and I was ignorant of that route, and the distances, as far as personal experience was concerned, and had not a map or notes of others' journeys, not intending to come that way. Simba, formerly agent for an English trader, Mr. Harrison, took me into his house a second night, and helped me about porters. He perhaps might have been able to do more for me if he had not been engaged about the Frenchmen's caravan. I planned to cross the Rovuma near the coast, but as there was difficulty in getting men, other than those of a chief named Msaka, about two days' journey inland on the south of the river, and these objected to go the way I wished, I settled to engage them, and come by their village. I knew there was some risk, as the chief has a bad character—formerly, I believe, was very troublesome to the Portuguese, though now they have made friends, and there is enmity between him and our chief Matola. On the second day the men laid down their loads and demanded their pay, and went off, the head man, however, remaining with me and the boy. However, they returned presently, and we reached Msaka's. Arrived there, they again demanded to be paid, instead of going on further, as agreed, and they went off with the loads. I followed, not knowing whether they were going to plunder them or what they would do. Presently an Arab appeared, as is generally the case, it seems, in all that part of the country, both north and south of the Rovuma. Eventually I paid the men, they promising to go on to the Rovuma next day. They were perhaps really afraid to go on to Lumanga's, a considerable chief, a long day from Newala. Anyhow it was all over with more carrying by those men. The head man, who was also engaged as my cook, went to his home at a distance with an umbrella of mine. At first I thought Msaka was a poor creature under the hands of the Arab, and that I had to work the latter to get more porters, &c. Msaka, however, I think, in a quiet way, was sharp and active enough for his own interests, as natives generally are, and he and the Arab worked well together for each other, and each for himself, and so they got 12 rupees and a 4s. cloth out of me for the former. I must say, however, that this Msaka would have some of my boxes opened. He did not plunder, nor did he much trouble me, even when worse for pombé. He unfortunately found out the excellence of ginger-nuts, and was greedy after them. My former head man and cook (Bonoman by name) appeared again, without umbrella ; but on further bargaining for the journey failed, his mind being apparently set on getting a kisibao, but in vain. Next day I opened negotiations with the Arab, and he agreed to take me to Lake Lidedi for 40 rupees. Lake Lidedi is a small lake south of Rovuma, near a longer lake—Nangadi—about two or three days' journey from Newala. As my boy Dandi had disappeared, an alarm possessed me that he had been kidnapped, but needlessly. I put together next morning in bag handkerchief, biscuits, matches, &c., as a resource in case of desertion by porters. Further agreement with this Arab for 5 rupees additional for men's food, and 10 rupees for himself. Start delayed because of pombé drinking. On 14th we heard that there was smallpox on the way we intended to go, *i.e.*, along the high-ground, and therefore settled to go by Rovuma. Next day the porters were troublesome about pay. The Arab gave up his engagement, and returned the money for porters. The two Frenchmen came to Msaka's with a Portuguese and Simba, dogs, &c., &c. They seemed to wish to avoid any intercourse. At last, on August 19, I got to the Rovuma, but unfortunately the chief there, Msefu, was a man who had last year been put into a chain at Newala, because Msaka had seized and kept three men from Newala, on account of some former quarrel. So matters were not much improved. Next day the French caravan ; M. Anzelog shot at hippos and wounded one. I paid Msefu an exorbitant charge for canoes to cross the Rovuma, he naturally taking advantage of the opportunity of remembering the chain, as one may suppose. With difficulty I got porters to Nekwanga's, on the other side, at some distance, some being coast people, who had come, I think, with the French caravan. On the sand in the middle of the Rovuma they demanded more pay, to which my necessity, not my will, consented. Nekwanga has some show of being a chief, and gave me goat and rice. Next day, however, his men, after agreeing to half their first demand, and being paid for part of the way, struck in the path for remainder, and then left me at a village before reaching the place agreed upon, and I had to get more men, and pay part of the way twice over. They seemed to boast of their Mohammedanism as security for their good faith. The result shows what that is worth, as professed in that part at least. This conflict about rate of pay and attempt to use pressure, by leaving loads by the path and going back, continued. I adopted the plan of going on, on the chance of the men following after all, which they did. At a village where Dandi and I arrived by ourselves, having left the porters to come to reason by themselves, and having lost ourselves till set on our path by a woodcutter, things seemed to be critical. Directly we had seated ourselves on a baraza, a crowd came round, excited and noisy, and we hurried inside a house—some trying to get in, others to keep them out, and whether it was all in consequence of a drunken quarrel—ending, I think, in murder—which had taken place near to very lately, or whether they took me for a German, and under coast influence were wroth, or whether it was merely curiosity aggravated by pombé I don't even now know. Unfortunately I do not know Makonde dialect. In the midst of the excitement the men arrived with the loads, to my relief, as I had begun to give them up, and to consider about sending for them. When I entered Lumangas, on the sixth day from Msaka's, he seems to have been alarmed and gone for his gun, thinking that I was a German, and was much relieved to find that I was "Apota." I tried to persuade him to make friends with the Germans. As to that French caravan, either they themselves were uncertain or they kept their intentions in the dark. I heard that at one place lately, south of Rovuma, the Portuguese flag had been hoisted. It seems they were going to see about working the coal on the Lujenda, Namtusis, and also make a depôt at Lake Lidedi. Possibly they were helping the Portuguese to establish themselves in the district inland south of the Rovuma. I understood that they were going to fetch up more loads from the coast. In the country north of the Rovuma, in the German "sphere of influence," there seems a great deal of half-concealed ill-feeling against them, and Arab influence seems strong for two or three days' journey inland. I am sorry to hear that the behaviour of the new comers at Lindi and Mikindani is calculated to provoke very reasonably the hostility of the natives. Considering the nature of the Makonde country, and the distances, I do not see much prospect at present of good order and peace, and such blessings of civilization following from the occupation. On the other hand it may be that caravans from inland will be diverted to the routes through Makualand, between the Rovuma and Zambesi rivers. There is an immense deal to be done yet, if all this appropriation and partitioning of the country is to result in real good to the inhabitants, a cure of the slave trade, and even advantage to those who come to settle, withal introducing the blessings of civilisation. This is rather a strong dose, but you will kindly pardon the excess, as the former deficiency of my communication. You will perhaps see Archdeacon Maples soon. I had the great pleasure of meeting him at Zanzibar, and am very glad to find him full of his former vigour and life. With very kind remembrances to all, I am, yours very truly,

Wm. C. Porter.

THE BISHOP'S ADDRESS.

The Bishop said there were certain faint-hearted persons at present who, taking advantage of mistakes which had been made and faults which had been committed by individual African travellers, were endeavouring to suggest to us that all African exploration was foolish and useless, or worse. He was afraid we must admit that certain mistakes had been made and certain faults committed, but he asked people to withhold their final judgment until we were acquainted with all the circumstances. But, admitting that faults had been committed and that mistakes had been made, did it follow that we should therefore entirely abandon the attempt to introduce Christian civilisation into Africa ? Knowing what we did about the present condition of that unhappy continent, was it possible for us to fold our hands in smug content and pretend that we believed that the inhabitants of Africa were living in a kind of savage Arcadia ? We knew that the very opposite was the fact. The natural condition of the negro savage was one of deep moral degradation and unhappiness. The stronger were always oppressing, tormenting, and destroying the weaker, and both stronger and weaker were in a state of continual terror because of their childish belief in the existence of malignant unseen powers. Then we knew that the Arab and the semi-Arab Mussulman were turning the very richest and most populous parts of Africa into a mere human hunting ground, and using the better arms and the higher intelligence of a superior race to turn Africa into a veritable hell upon earth. Even if these things were not true, he held that the time had passed for us to draw back when we found so many of the European Powers partitioning Africa into spheres of influence and penetrating it everywhere with their soldiers and traders. And so he believed we must go on endeavouring to improve the condition of Africa, endeavouring to bring into beneficent contact with its savage peoples the force of Christian civilisation, and so to adapt this force to their prejudices, their weaknesses, and their capacities, that on the one hand we should exclude the dire evils of ignorance, superstition, slavery, and drunkenness, and on the other hand gradually raise Africa to a higher moral and social and religious level. He thought we ought to learn three lessons from our experience in Africa, and especially our recent experience. We ought to learn, first, a lesson of humility, for experience showed how terribly degrading was the influence of a savage life, and how much an English gentleman depended for the maintenance of his highest moral attributes upon the support of the Christian society in which he is born and bred. And, secondly, he thought we ought to learn a lesson of watchfulness. When people went out into the savage countries they ought to be continually calling to their remembrance the fact that they were bound to live amongst savage peoples a higher life than that which was around them ; and though this was a secular society, he ventured to say they ought to pray to God to give them grace to preserve them from doing anything in the centre of darkest Africa which they would be ashamed of doing in the light of Christian Europe. And, thirdly, he thought we ought to learn a lesson of charity. Who were we, sitting in our arm-chairs and surrounded by the checks and supports of Christian society, to judge those who were doing our work in foreign lands, in the midst of hindrances and difficulties of which we could hardly form a conception ? The natural difficulties were bad enough—the difficulties of penetrating foodless forests and marshes haunted by watchful enemies—but they were as nothing to the necessity of employing as our agents men who were nothing better than full-grown and very vicious babies—men who to avoid momentary toil would throw away the arms with which they had to defend themselves and the food that was to keep them from starvation, and who to gratify a passing whim or to get a mouthful of fruit would lose themselves in the intricacies of a pathless forest at the imminent risk of death. We ought certainly to learn these three lessons ; but there was nothing at all in our recent experience to justify us in withdrawing from the philanthropic enterprise of introducing Christian civilisation into Africa and of trying to rid her from the thousand curses which were darkening and desolating her life. There was abundant work for the Geographical Society to do, in spite of all the opposition which had been offered, and he trusted they would not be slack in doing it.

ARCHDEACON MAPLES'S ADDRESS.

Archdeacon **Maples** said he felt it a great honour to be called upon to speak to them about the part of Africa with which he was connected, and in which he had spent so many years of his life. It would be known to many of them that he was connected with the Universities Mission, and as the Bishop had asked of what place he happened to be archdeacon, he would inform them that he was Archdeacon of Nyasa. He had lived there for the last five years, and his present object was to tell them something of the life of the people there. It was about the east side of the lake alone that he would speak. The Bishop had very properly pointed out that one feature of savage life in Africa was that the stronger tribes were always preying on the weaker ; and in no part of Africa was this more constantly to be seen than in the part of which he was speaking. They would see on the map, a little above the north end of the lake, the name of the Magwangwara tribe. With this tribe the Universities Mission has had a precarious sort of friendship for the last five years. Their mission stations had been raided by the Magwangwara, but some visits they had since paid to the tribe had resulted in a kind of precarious friendship. That friendship had been of the greatest benefit to the tribes along the east shore of Nyasa. The Magwangwara were still very wild and warlike, living only for plunder and rapine, but to a great extent they respected the mission, and were unwilling to do anything to the villages along the lake side which would bring them into disfavour with the missionaries. So this precarious friendship they had with the Magwangwara, among whom they had no mission stations as yet, they were careful to utilise for the benefit of the people along the lake with whom they had direct relations. Nyasa was 350 miles long, and about 55 miles broad at its widest. It was almost without islands. Likoma and Chisumulu were practically the only two, and on these were the headquarters of the Nyasa branch of the mission. Likoma had a population of about 3,000, which was a very large number for an island five miles long, and scarcely more than three in average breadth. They all spoke one language, and were a very quiet, peaceable people, as were also the Nyasa people along the eastern shore of the lake. The island of Chisumulu was about a third of the size of the other, and had a population of 1,200. From these two islands the Universities Mission did all it could along the lake shore to civilise and Christianise the people. They were largely helped in their work by the possession of a really fine steamer, named the Charles Jansen, named after one of their missionaries, who, seven years ago, laid down his life on the shore of the lake. The steamer enabled them to go about the lake very quickly and easily. It was a peculiar thing that all along the eastern shore the villages—or it would be more proper to call them towns—were built absolutely on the lake shores. They would see, therefore, how important to the mission was the possession of a steamer. It might be interesting to explain a little how these towns were built. The houses were the ordinary native huts, and they frequently tumbled down, and sometimes were burned down. The natives generally chose a spot where there was a large stretch of dry sand running out into the water, and immediately behind it a swamp. The swamp was a death-bringing thing to Europeans, so that it was impossible for them to settle in any of these towns. But while the swamp was death to the European it was life to the African. The Magwangwara tribe, who had been in the habit of raiding the poor Nyasa people wherever they could, carried off boys and girls as slaves, and left behind them a scene of desolation. But these swamps were a barrier the Magwangwara could not cross, and knowing this, the Nyasa natives fixed upon these spits of sand as the safest sites for their villages. The most important chief on the eastern shore of the lake was Makanjila. The only man who came near him in influence was Jumbe, at Kota-Kota. It had been specially arranged by the British Government that Makanjila should be included within British territory. It was thought that if Makanjila were included, as well as Jumbe, peace might be patched up between two chiefs who were always in a state of great jealousy against each other. He would not detain the meeting with details regarding the mission work at Likoma. A certain number of people had responded to their teaching, and a large number more were considerably under their influence. In almost every town in their district they had placed native teachers, trained at Zanzibar, and for Africans these native teachers were highly educated. They were doing good work, and in nearly every one of the towns had obtained the respect of the chiefs. The missionaries did all they could to keep the chiefs at peace with one another, and except for the fear of the Magwangwara peace did reign along the eastern shore of the lake. The missionaries were thus doing something to prepare the way for trade and commerce. In the few years he had lived at Likoma he had seen the whole population clothed. When he first set foot on the island there was hardly a piece of cloth amongst the 3,000 people. Manchester handkerchiefs and Manchester sheetings were the currency used by the missionaries, and in this way the natives had come to be clothed. The missionaries owed a great deal more to Manchester handkerchiefs and Manchester cloth than Manchester people could guess. It was their possession of goods of this kind that saved them on one notable occasion from the Magwangwara, who argued that if they destroyed the missionaries they would destroy the source from which these goods came. So the vote was given against exterminating the station of Masasi, on the principle that it would be a foolish thing to kill the goose with the golden eggs. Archdeacon Maples closed his speech with a few other details of his work amongst the Nyasa people.

MR. J. W. MOIR'S ADDRESS.

Mr. John W. Moir said he had been asked to say a little with regard to the products of Nyasaland and the efforts that were being made to make the country more valuable commercially. When the missionaries first went into Central Africa, twelve years ago, they found a country much depopulated by the slave trade, and not very fruitful. Apart from ivory and small quantities of indiarubber there was almost nothing to export from the country. The missionaries needed native labour, and paid for it in Manchester goods, so the natives looked upon them very much as traders. They were received very kindly, partly on this account and partly because they came from the country of the Makololo, who received them as the "brothers" Livingstone had promised to send. A little later the African Lakes Company came into the district and were well received, because they were considered to be the "brothers" of the missionaries. Almost the first thing which occupied the attention of the company, after the preliminary difficulties had been overcome, was the introducing of those things that ought to be sources of wealth to the natives. What he would mention first, as of particular interest to Manchester people, was the efforts made to introduce cotton into Central Africa. They found on going first into the district, as Livingstone had found before them, cotton trees in small groups round most of the villages. The dozen or so of trees belonging to each village were allowed to grow quite uncultivated, and produced cotton of a fair description, which was laboriously woven on a small frame into pieces of cloth 5½ or 6 feet long, and 3 or 4 inches broad. The African Lakes Company tried cotton seed from different countries, and one plant from Peruvian seed grew splendidly on the hills, and produced a cotton superior to the indigenous. The seed obtained was carefully sown near Katunga's, on the Shiré River, and promises well, although cotton raising is not yet beyond the experimental stage. Just before he left the district he had some difficulty in buying a piece of land for these experiments from the Makololo. He called one or two of the chiefs together and explained what the company meant to do, and how it would benefit the natives, and promised to get seeds from different parts of the world to experiment with them, and later to distribute seeds to the chiefs, that they also might grow good cotton. In addition to cotton the company had tried to cultivate various other things. They had tried several fibres, some of which seemed to be thriving excellently, and might in time be worth exporting in quantity. An experiment had been made with indigo, but unfortunately it did not seem to have succeeded, because they had had to devote all their attention for a time to the Arabs, so that in spite of considerable outlay in the indigo experiments he could say nothing definite yet as to the prospects. Among other things they had tried were tea and cocoa, but these were purely in the experimental stage so far. Several drugs had also been tried, and some promised well. Another thing was coffee, which had been a considerable success. The last year's crop sent to this country had realised 104s. a hundredweight. In 1878 the gardener of the Blantyre Mission had taken out with him to Central Africa two coffee trees from the Botanical Gardens at Edinburgh. One of them died, but the other shot up into a vigorous tree. Every single seed was planted and carefully tended, and something like 80 per cent reached maturity and bore full crops, so that before long acres and acres were planted with coffee trees. They might say, then, that coffee was a great success. The coffee was of excellent quality, but there was one serious drawback, which he hoped before long would be removed. The coffee trees ceased to bear sooner than was the case with the coffee trees in Ceylon, probably because some necessary constituent was deficient in the soil. The company had also tried to introduce various fruit trees. European vegetables had been largely grown by the missionaries and by the company, and there was no doubt that the introduction of fruit and vegetables would help to make the country not only more pleasant for Europeans but also to increase their health. The fruit trees which the company were trying had been obtained from Cape Town, Natal, Malta, Lisbon, Algiers, and other places. Some of them were thriving splendidly. In regard to the future of Central Africa he had great hopes, and in particular with regard to the district of which he was speaking; but as an honest man and a "canny Scot," he must say that in the meantime he could not endorse all that had been said by some. It was originally a poor country, although certainly increasing in value. They hoped that some of the things with which they were experimenting would turn out of very considerable commercial value. The district, too, might yield gold abundantly. At the same time it was unquestionable that the country was still rather a poor country, and needed a great deal of capital and energy for its development. He yielded to none in hopefulness as to the future, but warned them against being too sanguine. Administration in such a country should be strictly economical at the outset, and should be so planned that it should expand with its growth in wealth. The Congo Free State had burdened itself with expenses more heavily than the country could well afford; and, from what he had heard in Manchester during the past few days, he feared that these taxes might paralyse commerce. Mr. Moir afterwards gave an account of their troubles with the Arabs. When the company went into the country, thirteen years ago, they altogether trusted to the goodwill of the natives. At first they were supposed to be like the missionaries, but the natives soon learned to discriminate between them. He looked back, with thankfulness, to the fact that the men whom the directors of the company selected to begin their work were men whom the British nation could regard with pride. They went there as honest British traders, with a good reputation to maintain. They had a little advantage over the missionaries, because the natives speedily saw that a greater amount of goods passed through their hands than through the hands of the missionaries. The year 1884 was one of dreadful disaster and loss to the company. First of all, one of the Makololo chiefs was shot by a European. The natives sent to the station demanding a preposterous payment, and coupled with the demand for goods was a demand that a European woman and child should be handed over to them. Fortunately, they had fortified a house, which had been built for such emergencies; and when the native emissaries arrived they were able to make a great show of force. The letter containing the native demands was torn up before the emissaries, who were told to go back and say that such demands could not be listened to. The emissaries were so much impressed with the show of force the white men were able to make that the natives deemed it prudent not to make an attack. With the assistance of Consul Foote they were able, in the course of a couple of weeks, to make peace for a merely trifling payment. This left them with more prestige than they had before. Hardly a month passed before another blow fell upon them in consequence of the insurrection of the Machinjire, a native tribe, against the Portuguese. It was mainly through the pluck of a volunteer force, under the command of his brother, Mr. Fred Moir, that this insurrection was put down. This left them with greater prestige than ever. A little later a further trouble fell upon them in consequence of the rising of a tribe from the south-east of the lake; and then came a tremendous attack by the Arabs, which they were fortunately able to withstand, Consul O'Neill and the Rev. Lawrence Scott coming at an opportune moment to their assistance. He hoped that the details he had been able to give, with regard to the work of the African Lakes Company, were not without some interest to the commercial community of Manchester.

THE REV. D. KERR CROSS'S ADDRESS.

The Rev. D. Kerr Cross, of the Free Church Mission, said that the work in which he was engaged was on the west shore of the lake. Nyasa might well be called a great lake, for its surface area was 14,220 square miles. It was 1,600 feet above the sea level, and received the drainage of a very large stretch of country. The general configuration of Africa could be illustrated by taking an ordinary soup plate and turning it upside down. The border represented the unhealthy coast area, and the raised part the plateau country found in the centre of the continent. Along the western shore of the lake the Free Church had thirteen stations, some of them conducted by natives. The tribes along the western shore were puny, insignificant people. The influential tribes lived on the hills. The country west of Nyasa was comparatively healthy. The temperature was very equable, and the natives were exceedingly friendly to white men, and gave them every encouragement to settle in their midst. It was, however, not so much to the west shore as the north end of the lake, where he had lived for five years, that he wished to direct their attention. Some parts of Nyasaland were exceedingly fruitful, and some parts were somewhat poor. Of the north end he might say that it was to some extent an arcadia. He had seen many countries, but, perhaps, none that could beat this part of Africa, particularly after you left the north end of the lake and went towards the hill country. Consul

Johnson, at the recent meeting of the Royal Geographical Society, had spoken very highly of this country. You could walk all day long under banana trees and in the banana groves. There were thirty-two different varieties of bananas and plantains. The native houses were very well built and cleanly. When on the march he often lived in them, and found them very comfortable. The rainfall was very great over Nyasaland, and the lake received the waters of nine great rivers between Karonga and Parambira Bay. In the district of which he was speaking the people had an abundance of cattle ; and one could not walk many miles without coming across great herds of these beautiful animals. The scene, on looking down upon the valleys, was pleasant indeed. Herds of cattle grazing, the herdboys playing on their pipes and cow-bells tinkling. It was indeed a pleasant land. He grew his own coffee, and eventually he would grow his own tea. Tomatoes attained the size of his double-fist. Most European provisions could be grown, and almost everything they had tried had turned out well. Cotton grew extensively. One district was very rich indeed in cotton, and you could hardly go into the village without seeing one or two African looms at work. The patterns turned out are very pretty. The country was exceedingly rich, not only in cotton but in iron. He had counted on one hillside as many as five smelting furnaces, and there was hardly a village which had not one or two blacksmiths' shops. From the geographical point of view this country was exceedingly interesting. Leaving the north end of the lake, and travelling for three days, you reached, after a stiff climb, a plateau which runs right on to the south end of Lake Tanganyika. The route was along what was known as the Stevenson Road. Within a day's march of each other were waters which ran south and west, and ultimately reached the Atlantic Ocean by means of the Congo and waters which found their way east to the Indian Ocean. The temperature was equable. There were two seasons, a season of rain and a season of dry weather. The rainy season usually began about November and lasted till the middle of April. The rainfall was upwards of 100 inches. The dry season was from May to November, but seldom a month passed during the dry season without a gentle shower of rain. White ants are found generally all over Africa, but in these uplands no white ants are found. To give an idea of the richness of the produce he might say that he could buy an ox for what cost him seven shillings, a sheep for one shilling and sixpence, and six fowls for one shilling. Food was everywhere abundant, and the natives had no difficulty in obtaining in some cases three crops in a single year. Dr. Cross gave an account of a journey he made to Lake Hikwa last November in company part of the way with Consul Johnson. The first six days of the journey were exceedingly pleasant. The country was green and fertile, and, but for the absence of country houses, might be taken for a part of England. After crossing the range which forms the basin of Lake Hikwa the aspect of the country entirely changed, and for three days they were travelling through one of the most barren deserts he had ever seen. It was with the greatest difficulty that they obtained from the natives food and water. When they had got to a point twelve miles from Lake Hikwa, Mr. Johnson was compelled to return, and Mr. Cross went on alone. He reached the lake with great difficulty. It was entirely different in character from Lake Nyasa. The water was brackish, and the sand was covered with a white incrustation, as of some kind of salt. He brought back with him from Lake Hikwa specimens of the water, the shells, and other things. Mr. Cross added a number of particulars in regard to the work of the mission with which he is connected.

Mr. J. A. Beith moved a vote of thanks to the Mayor for the use of his parlour, and also to the three gentlemen who had addressed the meeting on the subject of Nyasa. These gentlemen, he said, were worthy successors of such explorers as Dr.

Livingstone, and were doing much to consolidate and develop the work which had been so honourably begun. We had an illustration here of missionary and philanthropic work closely allied with commerce, the one reacting on the other. He thought they should take to heart the warning given by Mr. Moir that the commercial development of the country was bound to be a work of time. Industries and habits of civilisation could not be developed in a day. If they accomplished this in a quarter of a century they would have done it quickly.

Mr. SIDNEY L. KEYMER seconded the motion, which was heartily passed.

Mr. SOWERBUTTS explained that one of the three speakers had come to the meeting from Glasgow, another from Edinburgh, and the third from Sussex. They were perhaps three of the most distinguished men Britain had at work in that part of Africa.

Archdeacon MAPLES responded, and a vote of thanks was afterwards given to the Bishop on the motion of Chevalier FROELICH, seconded by Mr. ZIMMERN.

The proceedings then terminated.

BOOK NOTICES.

COMMERCIAL GEOGRAPHY. TWO NEW BOOKS.

Map Studies of the Mercantile World. By John Yeats, LL.D., F.G.S., &c. 1890. pp. 336. Numerous tables. Geo. Philip & Son, London.

The Golden Gates of Trade, with our Home Industries. By John Yeats, LL.D., F.G.S., &c. pp. 354. Map, Index. Philip & Son, London.

These two books on the subject of "Commercial Instruction," are a noble addition to the handbooks on the subject already published by Dr. Yeats.

Dr. Yeats says, "Our Map Studies of the Mercantile World not only indicate the most prominent place of production . . . but illustrate the following important principles: Extremes of climate or sterility of soil must limit the returns of labour, yet not so much as mental indigence lessens the reward. Each country is considered here, primarily, from a commercial point of view, and pains are taken to show the trade division and area to which it naturally belongs, the density, and indirectly the condition, of its population, its mineral resources, its principal products, its markets, its ports, the extent of its commerce, with our particular share, and the prospects of enlargement it affords." In this volume the world is dealt with by countries, statistical abstracts of the continents are given, and a tabulated list of the produce of the British Isles.

The second volume, "The Golden Gates of Trade," treats upon the following questions in a graphic manner: Necessaries, conveniences, comforts, and luxuries; sources of supply; division of labour; rural occupations; town pursuits, markets, and trade centres; great cities and capitals; internal and external trade; ebb and flow, with circulation of merchandise; competition and co-operation; migration at home and emigration abroad; commercial site of the United Kingdom; our great oceanic communications; railway thoroughfares and trade junctions; importing and exporting; a student's requirements for business; new openings for trade; fellow traders—rivals in business; commercial facilities; studies of the United Kingdom—a key to our home trade; natural trade divisions of Europe, of England, Asia, Africa, America, and Australia; alimentary and industrial essentials, with auxiliary products of the mercantile world, &c., &c. The two books (which are sold separately) are full of suggestions for those who are able to profit thereby, and of facts which are marshalled in a striking and agreeable way to the student, the teacher, or the merchant. The books are well and clearly printed.

LOS ANGELES AND SOUTHERN CALIFORNIA:

A RETROSPECT.

By Mr. I. W. Thompson.

(Addressed to the Members in the Memorial Hall, Wednesday, Dec. 2nd, 1890.)

When I intimated to our secretary a willingness to read to you a paper upon California, the farthest idea in my thoughts was that such a prominence would be allotted it in connection with your Society's proceedings. Whilst living in that section of the United States, never for a moment did I think I should become identified in any way with the Manchester Geographical Society, else I should doubtless have provided myself, not only with photographs, but also one or more maps of the district in which I lived. Under the circumstances this is somewhat unfortunate, and to be regretted.

To many Englishmen, the very idea of journeying to California seems beset with many trials and dangers, and whilst it is impossible to measure distances with the mind's eye, it does not seem, standing as we do here, as though we had only reached the half-way house when we set foot upon the wharf at New York. Though, as I have just said, it is somewhat impossible to measure distances with the eye of the mind, it may not apply with equal force when brought into contact with circumstances or events. Some sections of the native-born Americans appear to me to be somewhat wanting in their geographical knowledge. Whether this may be attributable to their having been careless at school, or through a lack of energy in the teaching department, I do not know. It was a source of amusement to me to hear them boast of their country, and draw some of the most illiterate ideas of places of which they have often heard, but never seen. It would be invidious on my part to condemn the many for the faults of the few, and as my experiences brought me into contact with the few, I might assume that any strictures of mine might be saddled upon the right shoulders.

The American is proud of his great nation—and naturally so—yet he tries to cast a slight occasionally upon the "Old Country," as he terms it, forgetting that the *acme* of wisdom is not confined to any nationality.

The name of California has been made memorable, not because of its orange orchards, or even its canned peaches, but mainly from its gold diggings, which, since the year 1849, have been one of its great sources of wealth.

Los Angeles, or the City of Angels, is not a port, the sea being some 15 or 16 miles distant, the nearest port being San Pedro, to which the Southern Pacific Railway run trains daily. A few miles north, on the coast, stands the town of Santa Monica, which is utilised largely as a seaside bathing resort. On the sands, a little above the tidal mark, have been pitched a great number of tents, belonging to private families from the city, who go down during the hot summer season spending weeks with their friends under canvas, daily bathing in the surf of the Pacific Ocean. This has proved one method of living at the seaside, without paying any rent. In the year 1888, however, the town authorities of Santa Monica decided that no more tents should be allowed, whilst those which had been there for years were not to be disturbed.

One of the anomalies in connection with American institutions is that of politics, the strangeness being in the fact that the Republican should be so conservative, whilst the Democrat should be so liberal. I remember on one occasion putting the question to a native-born Californian, "Can you give me any information in regard to American politics ?" "In which way ?" I was asked. "Well," I responded, "the presidential election is coming off. A lot of you are talking of the Republican, whilst others are talking of the Democratic ticket. Americans are living under a Republican Government. What is the difference between a Democrat and a Republican?" His answer was unique, "I'm darn'd if I know." You perceive, in politics no less than geography, they are as well educated as a few Englishmen.

One feature in their characters—the women equally with the men—is a sense of independence. This is nurtured in them, and sometimes I was inclined to think it had a tendency to beget a spirit of impertinence.

We often hear of and read about American wit. My impression is that it is not generated to any extent on the Pacific slope.

The great trunk lines of railway are to be thanked for much of the push and energy displayed in the great far west. The finding of gold on the Sierras was the initiatory step in the development of this part of a great country.

Los Angeles, which bears the name of being the capital of Southern California, has now a population of from 50,000 to 60,000 inhabitants. It has been a boomed city, otherwise its progress might not have been so great. The County contains more than 100,000 population, with an area of about 2,500,000 acres. Present death rate, 12·5 per thousand. My entrance into this city was somewhat disappointing, the glowing accounts I had heard having led me to anticipate a much more beautiful appearance. On emerging from the railway station (or Depot as it is called here), on San Fernando Street, I saw before me a lot of property, principally wood-built and dirty looking, with an admixture of brick-fronted structures, the tendency of which gave a poverty-looking appearance to the wooden buildings. The wood of which they were built was of a dirty-brownish hue, and of a very coarse and brittly nature, much resembling a sort of bastard cedar. I was subsequently told it was Oregon redwood.

The San Fernando Street Depot is a wooden structure, and at this time (November, 1887) the principal station of the Southern Pacific Railway. Since then they have erected a new and modern structure somewhere, about two or two and a half miles farther west.

Los Angeles is divided into two sections, viz., Los Angeles and East Los Angeles, the dividing line being the river. The Los Angeles River is broad but shallow, no great volume of water coming down between its banks, except during the rainy season. Occasionally it has overflowed, causing a great amount of trouble to that section of inhabitants living in the lower part of the city. You see they can have floods, without coming to the "Manchester Ship Canal" to find them. East Los Angeles is principally used for residential purposes, whilst the main business section is located between the river and the centre of the city, mostly contiguous to the line of railway.

The city is surrounded on three sides with a series of low hills, ranging from two hundred to about four hundred feet high, the highest of them being at the top of College Street, and is a conspicuous landmark for miles, looking immediately over Sonora or Spanish town, a section of the city in which the Mexican and Spanish element preponderate. The clay is of a very peculiar character, and would prove very interesting to the geologist, inasmuch as it conveys the impression of undergoing a sort of transition. Some of it appears to be too hard to be clay, yet too soft to be called stone, and this is sometimes found at a depth of several feet below a bed of good loamy soil. In some patches are to be found embedded innumerable small stones, which conveys the impression of its having been subjected at some distant period to the action of the tides. This was particularly noticed in the grading of Belle-Vue Avenue above Beuna Vista Street.

During my stay some brickfields were in operation on College Street, the main labour of which was performed by Chinamen. I cannot speak very highly of the quality of the bricks themselves. They would be of no use in this country for outside work. For inner walls they might possibly do, because no difficulty would be experienced supposing you wanted to drive a few cut nails through them. Whatever faults or failings the Chinese may have, no one can charge them with laziness. Hour after hour, without a grumble or complaint, he works away, barefooted, and in a broiling summer sun, carrying six bricks at a time in his mould, whilst the moulder works as though he would lose his situation if he attempted to stop for a moment to take his wind.

Standing at the Depot, on San Fernando Street, behind which are the repairing shops of the S.P.R.R., looking citywards, you have two of these small hillocks to your right, the freight depot before you, an engineering firm and a flour rolling mill in front beyond the large freight yard, where the roads divide going up towards the city. There are three main roads, viz., Upper Main, Lower Main, and Alameda Streets. Upper Main Street branches to the right from the end of College Street, whilst Lower Main Street branches off Alameda Street, some half mile further west. Along Alameda Street the railway runs, and forms three branch lines some two or three miles distant from the old depot, one running to Santa Ana, another to San Pedro, and a third to Santa Monica. This American railway system is a thing we miss in England. With us it would be a question of building arches or else boring tunnels to carry the trains. Out West, however, they have no such embargo upon their charters, and the bell on the locomotive can be heard clanging long before you run any risk, giving ample time to get across. On Alameda Street, at the corner of Macy Street, is an old Roman Catholic Girls' Orphanage and School, the children in which seem beautifully happy, and void of that mark in their dress which seems such a great requisite in this country to prevent their running away.

Branching off slightly to the right into Lower Main Street, we are soon at the Plaza, where the two Main streets merge. Here begins the principal business section of the city. In the centre of the Plaza or Square is a little park-like cultivated garden, encircled by iron railings, with green grassy swards and beautiful flower-beds, in the middle of which is a small fountain. To the left of the Plaza is situated a portion of China Town, To the right is a very old adobe mission church (Roman Catholic), where services are principally used for the Spanish and Mexican section of the inhabitants. At the left of the Plaza, at the end of China Town, Los Angeles Street begins, at the corner of which is one of their fire stations. Los Angeles Street contains the principal of the wholsale stores from which the retail dealers make their purchases. To the right of the square is North Main Street, with the Pico House, a fine white painted hotel.

Looking backwards over the ground you are supposed to have travelled, you see in the distance, towering above the small hillocks previously referred to, a huge range of hills some 4,000 or 5,000 feet high. In the beautiful and clear atmosphere of California these "hills," which seem comparatively very near, are about twenty miles away, whilst "Old Baldy," some sixty miles distant, does not to the vision appear farther from you than some of the Derbyshire hills do from Manchester. So beautiful and clear is the atmosphere that I have seen this mountain plainly when the moon has been at full. Other mountains, ninety to one hundred miles distant, are plainly visible further down the range. On this range of hills, in full view of Los Angeles city, is situated Wilson's Peak, upon which the University of Southern California are purposing to erect an observatory, the telescope of which will be the biggest and most perfect in the world.

Resuming our walk we pass along North Main Street, and about a quarter of a mile down the roadway narrows, Main Street going to the left and Spring Street to the right in parallel lines. Here are to be found some splendid blocks of well-built property, the only danger being the great quantity of wood utilised in the inner shell. The residential part is almost exclusively built of wood, the varied designs of which re very pleasing and chaste.

The city contains about 40 churches of varied denominations, one of which held its services in the Grand Opera House, under the ministry of the Rev. Dr. Eli Fay.

You will perhaps pardon a slight digression here. Dr. Fay was a lucky man, yet a great educationist, and whilst in California I saw it mooted he had been so prosperous in land speculations that he made a present of some 200,000 dols. to some Eastern college for educational purposes.

In connection with American institutions, you do sometimes find things which we in this country might copy, one of these being the postal department in one of its phases, viz., the *private box system.* This is quite an institution, whilst the facilities for getting your letters are very nicely and methodically arranged. I believe a new post-office has been built during the past two years. Some three years since the old post-office in North Main Street had about a thousand private boxes, the keyholders of which have their letters addressed to the number of their box, the cost of which is a nominal two or three dollars per annum. Each box has a small door, opening outwards, with a glass window, through which can be seen at a glance if there be any mail inside. There is no going inside to trouble a clerk to look for you—you look for yourself, and if you see anything, take your letters.

Americans are big boasters, but in some things my impression is that they exhibit a species of conservatism which is in no way commendable. Citizenship is the *sine qua non* in American affairs. I do not know of anything, except ability, which will prevent an American, or any other countryman, from taking up a situation in any of our public offices. Not so in California. A man cannot become a policeman unless he's an American, either by birth or adoption. The same principle carries itself in all public offices. I remember a young Englishman going to take up the subordinate position of helping a postman to carry his mail bags, when the foreman questioned him. "Mr. P., are you an American citizen?" "No," he replied. "I have taken out papers of naturalisation." "Ah, well, I am sorry, but you must quit. We don't have anyone here but citizens." It is citizenship first, competency may have to retire to a back seat. This is one of the phases wherein I think they are behind the "Old Country."

Discipline is another element wherein they are lacking. It is a common thing to see a policeman puffing a cigar whilst on duty. I have seen one, on more than one occasion, regulating traffic at the corner of Spring and Temple Streets, have to pull the cigar out of his mouth to enable him to call out to someone he thought necessitated his interference. On another occasion, when the Los Angeles furniture warehouse was burning, the chief of the fire department was coolly smoking away at a cigar, whilst directing the firemen where to play with their jets. This, I presume, must be placed down as one phase of American freedom.

Since the bursting of the boom there must have been a marked advance in security than was in operation two or three years ago. I learn from one of their newspapers that a motion had been proposed to the city council to reduce the number of police officers to 50 men, which would mean one policeman to every thousand of inhabitants, and as the city limits will be some five or six miles square, one might assume that the council were quite justified in rejecting the proposal.

Whilst living in Los Angeles I have seen Manchester newspapers containing letters which would tend to induce people living in this neighbourhood to go there under the impression that you need only set foot on Californian soil in order to make headway and save money. At the time when these roseate ideas were promulgated in the Manchester press it was quite a common thing to find the public library crowded two minutes after opening at 9 a.m., whilst a cursory glance over the elbows of the readers would satisfy anyone that the advertisement columns received the most attention. In the early months of 1888 a large meeting of unemployed men was held near the Courthouse; and a meeting of the Associated Charities was held, at which the British Consul was present, when a resolution was passed condemnatory of a movement set on foot in this district to draft off unemployed females to the Pacific coast. California needs *good practical cooks*, not washerwomen. The atmosphere is so pure and clean, the windows do not gather as much dust and dirt in a month as in this district would accrue in a week. The better class houses have all their floors covered either with Brussels or Japanese carpeting, and the major part of the washing goes to the laundry. A woman who would go and take a series of lessons in practical cookery might find not only a good home but good wages also in almost any section of the state. The woman who is not a cook had better stay at home.

The great bugbear of the place is the presence of so many Chinese. And though John is an apt learner, and very docile, they turn on him when he has served their ends and say *he must go.* They do not mean it. John is a fixture, he does not believe them, and in his want of belief acts very philosophically. He is as conservative as, if not more so than, the American Government, sufficiently to know that no necessity exists for him to go so long as he supplies a want. The papers use him and abuse him as though he was of no use to them, and it pays the proprietors to trail him before their readers, making him the catspaw to increase their sale. There is one thing, however, which they will not do—they will not boycott him. So long as a Chinese will laundry a shirt for a cent less than white labour, the shirt goes to the Chinaman, and is subsequently worn by some good Republican, who begins talking about protection and the McKinley or some other tariff. It sounds like a paradox, but a Chinaman makes a first-class washerwoman! No one realises it more than the Americans.

In connection with the newspapers an editorial freedom exists, which would fill our English law courts with actions for libel.

Much has been said in the English press about the climate of California. My impression is that it is treacherous. It is not to be wondered at that so much catarrh and rheumatism should exist, especially amongst the new comers. In the middle of winter it is as hot as we experience it in our summer months—much more so than during the past summer season—whilst the heavy dews of night are such as to drip from the leaves of the eucalyptus trees like rain drops from a cloud. During the summer season you miss those heavy sultry days and nights which in this country we sometimes experience. Almost anything in the nature of a plant will grow.

The winter time is their rainy season, and lasts from about October or November to the end of April or May. From about the end of July the whole country is of a brown and dirty hue. At this time they are in no way anxious to have visitors. After the rain comes, the face of Nature undergoes a transformation, and the hills and valleys begin to wear a beautiful greenness. You can hardly look at the wrong corner.

The whole country looks healthy and beautiful, with the exception of the dirty, muddy streets, which in the warm sunshine emit a lot of foul exhalations you would think sufficiently powerful to produce an epidemic. The rainy season is not a continued fall of rain for these months. It will rain for about a couple of days continuously, then the clouds will disperse, and for a week or two there will be fine weather. After the rain comes, the loose soil on the roads forms pools of mud, and what the earth does not drink *in* the rays of the sun evaporates *up*, and by the time the roads are nice and dry you may prepare for another dose. The green herbage is not grass—it is a sort of weed, a kind of wild mustard, after the mustard-and-cress variety, which in springtime is much used in this country ; whilst another variety bears a leaf very much in design after the geranium pattern. Common horehound grows wild on some of the small hillsides, whilst cactus, of varied species, grows plentifully The common nettle will grow to 6, 7, and 8 feet high. If you want grass you must look on the garden lawns, where it is cultivated and cared for.

What the gold fields may have accomplished for the few, fruit culture is destined to do for the many. There is no doubt but that California is about to run a close race in the markets of the world, not only in the quantity of her fruits but also in the quality of her wines. A few more years will do much in the development of her fruit trees, inasmuch as many of her orchards are as yet very young. I remember walking through two orchards, some four or five miles from the centre of the city of Los Angeles—if my memory serves me right they were on the Wolfskill Tract—on Christmas Day of 1887. A notice board was erected warning anyone from plucking the fruit, whilst beneath the trees there appeared to be millions of oranges heaped upon the ground, rotting away. In a neighbouring apple orchard there were scores of tons of apples in a similar phase of decay ; and the sides of a railroad track which was being built through this section had the calcined trees and fruit mixed together, which had been cut down to make a way for the road. I thought what a pity ! Yet most of this fruit, if not all of it, was not fit for shipment, else the opportunity would never have been let slip.

I should like to have said a word or two on the fruit canning industry and the McKinley Act. Time, however, will not permit it. The finest oranges in California are grown at Riverside, a young town some fifty or sixty miles from Los Angeles. Between 150 and 200 miles south is a place called Indio, where we are confronted with one of Nature's wonderful freaks. For a distance of sixty miles or more in this basin, the trains of the Southern Pacific Railway run at a level of 250ft. or more below the sea ; and whilst in Los Angeles I had it told me that they had bored 1,500ft. without finding water. All along this district it is nothing more than a desert. The most thriving suburban town to Los Angeles is Pasadena, some nine miles away. Here is to be found one of the many fine hotels on the Pacific slope, the "Raymond." It is built of wood, and has a beautiful outlook across the San Gabriel valley, at which is another mission church more than a century old. This is a fine country for the naturalist. What with squirrels, rabbits, gophers, snakes, centipedes, tarantulas, coyotes, wolves, bears, ants, spiders, mosquitoes, turkey buzzards, owls, eagles, and many specimens of beautiful birds and flies, he would have ample opportunities of revelling in Nature's storehouse. By-the-by, I remember seeing a case of, not the spider and the fly, but the fly and the spider. It was observed as we were about quitting the city limits in East Los Angeles. On the ground was a big spider, with legs about 1½in. or 2in. long. About a foot away was a fly. It did not appear any larger than the spider ; and whilst watching them the fly rushed up, caught the spider, and literally ran away with it. I do not think I ever regretted more than I did then that I was not possessed of a *flycatcher.*

In leaving Los Angeles I was privileged by riding on the engine for some 150 miles. The highest point the train reaches on this road is when crossing the coast range, and reaches between 3,000 and 4,000ft. When coming down the mountains, the engineer told me that in order to make eight miles as the crow flies we had to make a circuit of twenty-five miles. It was between 5 and 6 a.m. on a beautiful September morning when I was having this journey. The early morning sun lent a charm to the lovely scene, when my attention was drawn to two mountain peaks. Asked, "How far would you suppose we are from yonder mountain top?" I answered, "I do not know." "How far would you guess?" I replied, "Ten or twelve miles." Drawing my attention to the nearer one he asked, "How far do you suppose this one?" I replied "Four or five miles." To which he replied, "This one is twenty miles away, and yonder is eighty miles from us. They are called the Twins, and are 100 miles apart from tip to tip." I thought this might possibly count *one*, as I was returning home, and the good engineer little thought, at the time of telling, the possibility of his chestnut coming before a society of such importance as that of the Manchester Geographical. He might be right. All I can say is that it is hard to be believed.

And now, as I have got you from southern into central California, it would be an injustice on my part did I not thank you, and leave you in the hands of our worthy chairman.

The Moriori.—In *The Transactions and Proceedings of the New Zealand Institute, Vol. XXII.*, is a paper by Mr. Edward Tregear, on the Moriori, the original inhabitants of the Chatham Islands, which lie about 400 miles to the eastward of New Zealand. There are but twenty-seven of these people now alive, of pure descent, and five half-breeds; and the other inhabitants of the group of islands are about two hundred and fifty Maoris, and as many whites. The Moriori are akin to the Maori in appearance, and in language, though somewhat shorter and broader in person. They are remarkable for the size of their hooked noses. They do not tattoo, and do not know the art; they appear to have had a regular marriage ceremony; and they dispose of the dead in a peculiar manner. If a man celebrated as a fisherman died, the body was lashed in a sitting posture to a canoe, and sent out to sea; if the dead man had been a bird-catcher, his body was fastened to a tree with the face turned towards the place he had most hunted over in life. The women ate apart from the men. The ancient huts were either Λ-shaped or conical, and formed by bundles of poles tied together at the top. Children were baptised, with ceremonies accompanied by the planting of a tree, as in New Zealand. In 1832, two Maori tribes made a raid upon the Chatham Islands, and took possession, treating the peaceable Moriori, literally, like sheep. The Moriori traditions, justly described as extraordinary and valuable, if authentic, carry back their genealogy through 184 generations; or nearly 3,700 years, at twenty years to a generation. The roll begins with Rangi and Papa (Heaven and Earth). In the 157th generation, when Rongopapa was living, canoes arrived in the islands from Hawaiki, or Hawaii. The old chief Tapu, now living, affirmed that his people were the original children of the soil, and that the canoes mentioned were the first arrivals from Hawaiki. Mr. Tregear, however, thinks it evident from their vocabulary and songs, and their genealogy, that the Moriori came from the same far-off Hawaiki. He gives the old names of the months, all names of persons, and unlike the Maori words. One sound in these names, written *tch*, is only met with elsewhere, in Tonga, and the other Friendly Islands. There are legends of an enormous bird which once existed on the largest island. The name given to it, *Poua*, almost identifies it with the mythical gigantic man-eating bird, *Pouakai*, of the South Island of New Zealand. The home of this little people is the island of Rekohu.

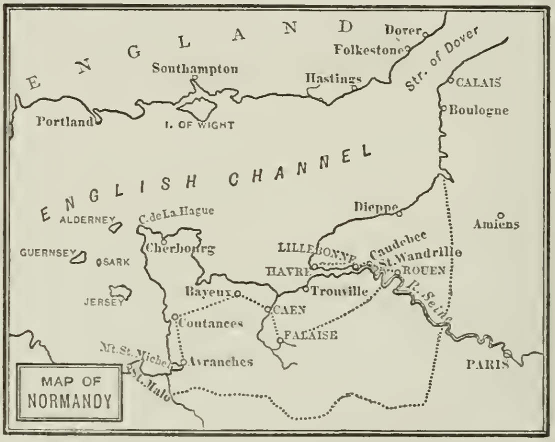
NORMANDY.—(*See Map and Illustrations.*)

By Mr. E. W. Meller.

[Addressed to the Members at the Pendleton Town Hall, Wednesday, December 17th, 1890, His Worship the Mayor of Salford in the chair.]

Comparatively few of the many travellers who go eastward and southward on their summer holiday stop to visit the picturesque scenery and quaint old towns contained in the north-west corner of France, separated from us by the English Channel.

This north-west corner of France is Normandy, a province more intimately connected with English history than any other part of the European continent. In those early days when the tide of invasion broke, wave after wave, over our island, devastating it from one end to the other, the last and most important one of all was the Norman invasion under William the Conqueror. This conquest swallowed up all that preceded it, and by slow and gradual steps led to the establishment of our present empire. Eventually the Normans became undistinguishable from the people they invaded, and, as a writer has expressed it, "Time has ripened the Brito-Anglo-Saxon-Dane-Norman into the Englishman." Now-a-days even, the people of Normandy bear a stronger resemblance to English people than those of any other French province. Another link of sympathy between us is, that in Normandy the features of the landscape are similar to those of England, hedgerows and enclosures being almost as common as with us, so much so that one Dr. Ducatel, writing in 1767, says, "Indeed, Normandy doth so much resemble old England that I could hardly believe myself to be in France."



I spent some time last summer in exploring and photographing. The sketch map herewith will enable the route taken to be followed, and the illustrations to the paper will give some idea of the large number of photographs taken in the tour.*

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*A large number of photographs were shown by Mr. Meller by a very powerful lantern, with fine effect.

I will not weary you with abstruse details as to the origin and progress of Normandy—suffice it then to say, that in 58 B.C., when Julius Cæsar resolved to conquer the Gauls, as the inhabitants of this territory were then called, he met with so fierce a resistance that the conquest occupied eight years ; subsequently Diocletian made the capital of the northern province a city which is now known as Rouen—still the chief city of the province—where, as we shall see, are many Roman relics. A little later came Christianity, and Rouen was made an early archbishopric.

The Roman power gradually declined, and we find Danish and Scandinavian pirates sailing up the Seine, plundering the country and destroying the towns. These invasions seem to have been continuous until A.D. 912, when we find that Charles the Simple, King of Paris, ceded the province entirely to one of these fierce Northmen, Rollo, or Rolf, who was installed first Duke of Normandy. This Rollo was the great-great-great-grandfather of William the Conqueror—*i.e.*, five generations.

From the days of the Conqueror, Normandy remained in the hands of our Norman and Plantagenet kings until the time of King John, called Lackland, when it became a French possession.

The Province of Normandy—about 150 miles long by about 75 broad—is composed of five departments ; or, may I say, counties ? For our present purpose we will confine our attention to three of these departments : Seine Inférieure, lying to the north of the river Seine ; Calvados, to the south of the river ; and Manche, on the west side of Normandy. Let us suppose that, voyaging by the steamer from Southampton, we arrive at Havre, the Liverpool of France, then, first taking the department of the Seine Inférieure, we come to Lillebonne, remarkable for its Roman remains ; thence to Caudebec, the Abbey of St. Wandrille ; Rouen, the Manchester of France ; thence crossing the river into Calvados to Falaise, the birthplace of William the Conqueror ; thence to Caen, where he was buried ; to Bayeux, famous for its ancient tapestry. Passing thence into the department of Manche we come to Coutances, and to that remarkable ecclesiastical and historical fortress perched upon the rock of Mont St. Michel.

Assuming, then, that we are arriving at Le Havre, or, as it was formerly called, Havre-de-Grace, from the Church of Notre Dame de Grace, which formerly overlooked the town, we get a fine view of the harbour and city as we enter. In the first place we have a view of the Avant Port or outer harbour, and it gives a fair idea of the great extent and importance of the port. Here we see the various steamers lying alongside the Grand Quai. Beyond this outer harbour are eight floating docks, the largest of which, the Bassin d'Eure, accommodates the splendid ships of the French Transatlantic Company. Havre is the second largest and busiest commercial port of France. Here are to be found the flags of all nations. Her principal foreign trade is with America, and we may call her the French Liverpool, not only on this account, but also because she is the port which supplies Rouen, the French Manchester, with cotton.

Havre owes its start in life to the English, for it was to oppose them that the French king Francis I. first fortified the little fishing village, than which nothing more existed until that period. Since that date Havre has continued to increase. The greatest tide of its prosperity has been since the battle of Waterloo. The population now numbers upwards of 120,000 inhabitants. The bustling streets tell of an active commerce, and contrast greatly with the sleepy air of the quaint old towns I am about to visit. In the centre of the town is one of the floating docks, the Bassin du Commerce. The quays bordering these basins are lined with vessels, and are blocked with bales, wine and sugar casks, metals, machinery—in short, goods of all kinds. The further end of this basin is principally occupied by private yachts. The great Theatre and Opera House is a large isolated building opposite one end of this basin. The Bassin du Commerce is surrounded by fine shops and brilliant cafes, in which may be heard languages from all parts of the world. At the extreme right of the basin stands the Bourse or Exchange. It is a very fine building, not quite so large as the Exchange in Manchester, but, like it, fitted with every facility for the transaction of business. The open space in front of the Bourse is a little suggestive of " the flags " in Liverpool.

Although Havre cannot boast such ancient history as the older Norman towns, it is interesting to note that the Earl of Richmond, afterwards Henry VII., embarked from here for England, with his troops, before his successful battle at Bosworth Field. Two generations later, the Huguenots placed Le Havre in the hands of Queen Elizabeth, but after a few years they slew her governor, and retook the town.

Leaving Havre, the little Rouen steamboat takes me up that magnificent water highway, the Seine. Taking the right or north bank of the river, in the department of the Seine Inférieure, after a journey of 18 miles I arrive at a high cliff, called the Nez, or Nose, of Tancarville. On the summit of this cliff, with a far-reaching view over the valley of the Seine, are the ruins of the ancient castle of Tancarville. The tower, called La Tour Coquissart, rises to a height of 60 feet, from a bower of nut trees which cluster round its base. There have been five storeys, but now only the outside shell remains ; and looking upwards, when inside, the ong grass may be seen waving against the blue sky, where formerly all was closed in by the vaulted roof. Scarcely any part of the present ruins is older than the 15th century. The arches on the left are part of the old chapel, and deserve a closer examination. In the castle is a well, 300 feet deep ; and deep down under one of the towers, called la Tour du Diable, is sunk a terrible subterranean dungeon, which, according to the legend, was taken possession of by the Evil One, who could not be dislodged until exorcised by the *curé*, or priest, of the village, with all the due ecclesiastical formalities of bell, book, and candle. The ivy has crept up the ancient arches of this chapel, and last summer, when I was there photographing, there was above and on all sides a rampant growth of wreathing clematis, harebells, and long-tufted grass. The chief interest in this castle of Tancarville is, that it was once the stronghold of the Tancarvilles, the hereditary Chamberlains of the Duke of Normandy, and I believe I am correct in saying that it is mentioned in Domesday Book. In a chart of Henry I. (1103) this castle is mentioned as belonging to William of Tancarville, son and successor to Raoul the Chamberlain. The present possessor is the Comte Lamberty.

A journey of five miles brings me to the town of Lillebonne, where once stood a castle, in the great hall of which William assembled his barons in council, to concert measures for the conquest of England. Imagine my dismay on arriving here to find that the present proprietor had had the barbarity to sweep away all traces of this ancient Norman hall, and on its site to build himself a stiff modern house, with little turrets and lines of coloured brick, looking for all the world like those wonderful trophies of reels of cotton, or tins of preserved meats, which one is accustomed to see at exhibitions. In the garden, however, is still left the old round tower, which I photographed. It dates from about the 15th century. The masonry is marvellous work. The stones are so evenly set that the grass cannot find a chink in which to take root. The tower is 55ft. in diameter and the old walls are 13ft. thick. It is surrounded by a moat, and passing over a drawbridge you ascend by a little corkscrew staircase, lighted by narrow slits of windows deeply splayed in the immense thickness of the wall.

But it is for its Roman remains that Lillebonne is most widely known. Julius Cæsar is said to have built a town here on the ruins of the capital of a tribe called the Caletes, and to have named the town after his daughter Julia Bona, from which is derived the modern name of Lillebonne. In the year 1812 there was excavated here in Lillebonne the remains of a Roman theatre, and all the authorities seem to be agreed that these remains are the best preserved, and indeed almost the only example of an ancient Roman theatre in the north of Europe. When we remember that it is well-nigh 2,000 years old it becomes of the most absorbing interest. The circular portion—the seats of the spectators—was for the most part cut out of the side of the hill. In the arena there was a Roman bath and a well. Between the walls is the passage to the performers' dressing-rooms. On the right was one of the entrances for wild beasts. The walls are faced with small stones, neatly jointed, behind which is flint rubble, strongly cemented, and the whole bound together at regular intervals with courses of red tiles. To quote a work on the subject, the stone employed is "a porous but coherent calcareous tufa, which is to this day deposited by the water of a neighbouring brook."

To the antiquarian this town of Lillebonne has proved a veritable gold-mine. In March, 1870, when the foundations of what is now a joiner's shop were being excavated, the spade struck a hard substance, which proved to be an ancient Roman mosaic pavement, wonderfully perfect. The Baron de Witte, a scholar learned in Greek and Roman antiquities, considers this mosaic to have been the pavement of a temple consecrated to Diana or Apollo. The subject in the compartment on the south side of the pavement is a huntsman drawing his bow to let fly an arrow at the stag, which is supposed to be running at full speed. The actual size of the figures is about 33in. high. In the centre of the pavement are two life-size figures, said to be Apollo and the nymph Daphne. The mosaic may now be seen in the Museum at Rouen. The ancient workers in mosaic must have possessed a special secret for making the cement with which the cubes are set, for it is wonderfully hard, and resists the damp, which is probably the cause of its preservation. As the pavement was not in a level position when discovered the water would easily drain off it.

Some dozen or fifteen miles from Lillebonne we come to the ruined abbey of St. Wandrille. This abbey was erected in a fertile side valley of the Seine, in the 7th century, by one Wandregesilius or Wandrille, who retired from court life to devote himself to this devout purpose. Very little more is left standing than a portion of the north transept and tower of St. Wandrille's Abbey. Until about thirty years ago stones from the abbey and pieces of sculpture were used as building material by the neighbouring country folk. The arches and columns are enough, however, to show that the original church must have been a lofty and beautiful building. The conventual buildings have been converted into a spacious mansion by the present owner, the Marquis of Stackpoole. St. Wandrille is one of the most ancient abbeys in Normandy. It was founded in the year 648, and it is interesting to note that Eginhard, the historian of Charlemagne, was a monk of this abbey. The cloister court and the cloister itself are good examples of the Flamboyant Gothic style of architecture. I may add that the cloisters of this abbey were the model for that very striking scene, where the graves open, in the French opera "Robert le Diable."

We now pass on to Caudebec, one of the most beautiful spots on the banks of the river Seine. The steamer which brought me up the river put me into a small boat, in which I was rowed to the stairs, and so reached *terra firma*. Elm trees screen the row of houses which face the river. Caudebec was anciently a fortress, and William the Conqueror appointed as its governor, Talbot, afterwards created first Earl of Shrewsbury.

Near this spot was the country seat of Victor Hugo. One day his accomplished and beautiful daughter, but lately married, came by water to market here, in Caudebec. She was returning, when the boat capsized and she was drowned. A very simple stone marks her grave in the neighbouring churchyard.

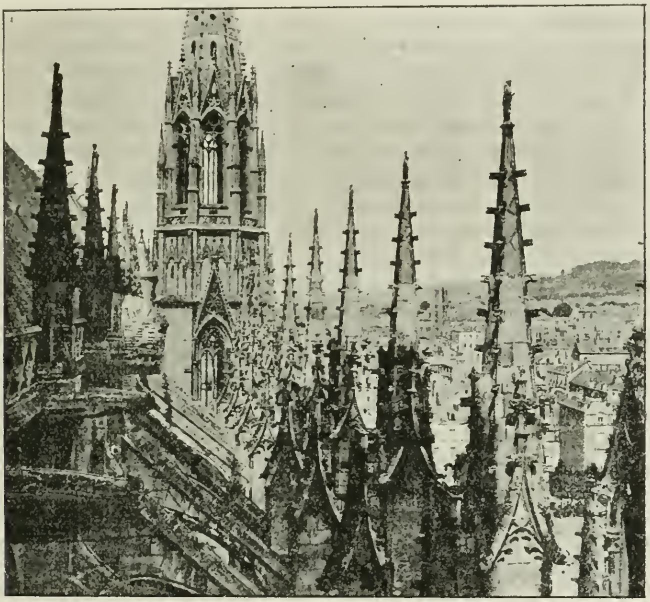
This broad river Seine bears large ocean ships past Caudebec from Havre, some eighty miles, to Rouen—the French Manchester—which therefore, you see, requires no ship canal. One evening I saw a caravan pull up in the open space in front of the river. The proprietor, in a blue blouse and straw hat, unharnessed the horses, and he and his family immediately arranged their evening meal. I could not see that he had any wares to vend, and was considerably puzzled as to his business. I found that he was a dentist, and thus travelled about to these country towns to extract his patients' teeth and cure their toothaches. He had no band of music—and his name was not Sequah !

This Caudebec is a quaint little primitive old-world town, and one of its most curious streets is the Rue de la Boucherie. The little river Gertrude runs along one side of the street from end to end. The houses project—on one side over the water and on the other side over the street—thus reminding one a little of the Rows at Chester. In the street are two very curious houses, called Les Maisons des Templiers, dating from the 13th century: their numbers are 4 and 6. Desiring to see them, I asked a woman standing at the door of her house if she could tell me where to find 4 and 6. She looked a little startled, and replied that she did not know. Then I asked her what the number of her own house was. She did not know that either, and was evidently mightily astonished at the question. I do not suppose that she is troubled with a very voluminous correspondence. I found the houses just three doors away, and came to the conclusion that I was certainly out of the beaten track of tourists. You will judge from this what a sleepy old town Caudebec is. A story is told that when the railway was projected to Caudebec the inhabitants gravely shook their heads and said, " We do very well. Why not let well alone ? " It is now, however, the terminus of a little branch line, with about three trains a day.

Some pretty little cottages are situated in the outskirts of Caudebec, and the adjoining sheds contain peat for winter consumption as fuel. Spent bark from the neighbouring tanneries is compressed into cakes about a foot in diameter and some three inches thick. These cakes, or *mottes* as they are called, are stacked to dry on shelves protected from the rain, and I was told that the *mottes* make a good hot fire. Most of the coal burnt in Normandy is imported from England—the carriage therefore makes it expensive.

My landlord at the Hotel de la Marine, at Caudebec, invited me to visit a farm which he has about five miles away, at a little village called Le Trait, and to which he drives off about half-past seven in the morning, leaving madame to manage the hotel and attend to the guests. The farmhouse was interesting, but not more so than my burly host, in his shirt sleeves, puffing away at his pipe as he treated me to a cup of black coffee fortified with some calvados, a spirit of the country, and which in this case mine host had himself distilled from his own cider. I found the mixture not so unpleasant as I had anticipated ! Inside this farmhouse there are many traces of antiquity, and it is interesting to note that previous to 1793—the period of the Great Revolution—it was the *paysage* where tenths were paid by the vassals or tenants to the *seigneur du pays*, who in this locality was the Duc de Cauchois. Behind is the forest of Maulevrier, from which wild boars frequently make their way to this farm, and in a single night a whole potato field is devastated, the boar always taking a straight row. The boar hunt meets at this house, and in the room through this door the walls are covered with hunting records dating many years back.

Let us now pass on to Rouen, the limit of our journey in the valley of the Seine, the ancient capital of Normandy, and now the chief town of the department of the Seine Inférieure. In its architectural triumphs of the middle ages, and in its historic associations, Rouen will yield place to no other provincial city in France. We arrive first at the Place de l'Hotel de Ville, a large open space, which enables us to get a good view of the Church of St. Ouen. This church is one of the very few perfect and completed pure Gothic edifices in France. The first stone was laid in the year 1318, and it occupied 21 years in building. St. Ouen is the largest church in Rouen, not excepting even the Cathedral. The west front has three deeply-set portals, surmounted by two flanking steeples. The centre tower, 285ft. high, is an octagon of open arches, surmounted by a crown of fleur-de-lis. After a rather tiring climb up a narrow corkscrew staircase we emerge upon the roof. Standing at the junction of the nave and south transept, and looking over the open-work parapet in a north-westerly direction, we get a birdseye view of Rouen. Down in the foreground is the Place de l'Hotel de Ville. In the middle of the Place is an equestrian statue of the first Napoleon. The conical, sugar-loaf-shaped roof seen in the distance is the Tour Jeanne d'Arc, in which the unfortunate Maid of Orleans was imprisoned. On the hill in the far distance is the Seminaire Mont Malade, a college for young men entering the priesthood. The view looking south-west from St. Ouen gives a better idea of the extent of the city. As you may judge, Rouen is a very populous city, numbering about 105,000. The river Seine, the magnificent water highway, brings the ocean ships from the sea at Havre, a hundred miles away, to this city of Rouen—this Manchester of France. Most of the mills and manufactories are situated in a large suburb on the further side of the river from this church of St. Ouen. Prominent amid this landscape of roofs stands the Cathedral. It is so closely surrounded by



Rouen.—Roof of Church of St. Ouen, looking west.

buildings that it is difficult to get a good view of it. The flying buttresses are most beautiful. The original spire of stone was destroyed by lightning in 1117. It was replaced by two wooden spires, which were in turn burnt down. The present spire is of open cast-iron work. It rises very nearly 500ft., and is only some 13ft. lower than the highest pyramid in Egypt. The top of the spire is reached by 560 steps—rather a weary climb! The southern tower of the west front is called the Butter Tower, and the northern one the Tower of St. Romain, and is the most ancient part of the Cathedral. We will visit the Cathedral itself presently, and will not linger longer to discuss it now. But do not forget that all this time we are supposed to be standing upon the roof of the still larger church of St. Ouen. Before we descend to *terra firma* again, let us for the moment realise the novelty of our position. We are standing on a level with the big bell in the tower. This bell is heard all over the city, and the effect upon us, while we are in such close proximity to it, when it tolls the hour, is somewhat electrifying—at least that was my experience during the two hours I was upon this church roof taking photographs.

From a row of pinnacles spring the flying buttresses supporting the wall of the clerestory, which is also surmounted by a row of pinnacles. The pinnacles are all finished at the top with a statue. The statues include St. Ouen himself, the abbots of the Monastery, all the Dukes of Normandy, the bishops and patron saints of the diocese, and the secular founders and benefactors of the monastery. I will not enlarge upon—indeed I am not able—such matters as crockets, cusps, niches, archery, archi-volts or groins, but we cannot fail to wonder at the architectural skill which erected this splendid fabric 600 years ago.

Let us now descend into the church itself. The first point of attraction is the choir, and then the south aisle, where I would ask you to notice the long vista of lofty clustered columns supporting the beautifully-pointed arches. But let us tread softly here, for see, there are some good people at their prayers, one of them a cavalry soldier in his blue jacket and red trousers!

Leaving the church of St. Ouen we now walk through the city. When the French king, Philip Augustus, took Normandy from our King John, he built a castle, of which nothing now remains except an old donjon tower. At the time of the great revolution, 100 years ago, all the fortifications of Rouen were destroyed except this tower, La Tour Jeanne d'Arc, which you may remember we saw in the distance from the church. We English people cannot help feeling some sense of shame as we gaze upon this tower, for when Joan of Arc fell into the hands of the English, it was in this tower that she was imprisoned, and here she was put to the torture. You remember the story of the unhappy Maid of Orleans, how at the age of eighteen she went to the French king, Charles VII., telling him that in a vision from heaven she had been commanded to lead his troops to victory against the English? A poetic description of her vision is put into her mouth by Shakspere in "Henry VI.," to which let me refer you. Shakspere was scarcely fair to poor Joan, but perhaps he was only expressing the popular opinion of his day. The French king equipped the Maid with arms and armour, and she did lead his troops to victory. Eventually she was taken prisoner and tortured, in order to wring from her a confession that she was inspired by the devil. Joan was then condemned to be burnt at the stake for witchcraft. The sentence was carried out on May 30th, 1631, in the presence of the Cardinal of Winchester and many prelates, abbots, and priests, in the Square, called after her the Place de la Pucelle. As she burnt slowly and painfully, she begged for holy water, and her last words were, "Pray for me." Her ashes were cast into the river Seine. It is unpleasant to feel that this cruel execution was not an act of justice, but an act of revenge, and it is a blot upon the history of both English and French chivalry—some of her chief accusers being her own countrymen.

The rather poor modern statue of Joan of Arc marks the spot where she suffered. The French people of to-day, you notice, plant the tricolour, their national flag, at her side, and hang wreaths of immortelles about her statue. The same thing may be seen in Paris, where since the Franco-German war the figure of Strasburg, in the Place de la Concorde, is hung with crape and immortelles, thus keeping alive an old sore. A short walk from the Place de la Pucelle brings us to the west front of the church of St. Maclou, one of the Rouen churches, and the third in importance. The Cathedral ranks first, St. Ouen the second, and this Church of St. Maclou is the third. It is a fine specimen of the florid Gothic architecture of the 15th century. One artistic writer describes it as an "exquisite jewel," and indeed this church was once called the eldest daughter of the archbishop. The great beauty of St. Maclou is the triple porch. It consists of three arches, in plan like a bow window, or the half of a hexagon. Above are lofty canopies, filled with the most exquisite tracery, on the doors is most beautiful bas-relief carving. The subjects of these carvings are Scriptural. That on the central door represents the Baptism of our Lord. During the few days I was in Rouen a number of young people were being prepared in the church for their first communion. I could therefore only photograph the exterior. A few paces away from St. Maclou is another relic of bygone ages. It is a quaint archway, gate, and clock, La Grosse Horloge (the great clock). The building dates from the early part of the 15th century. From the door a staircase of 200 steps, ascends into low tower, in which is the Cloche d'Argent (the silver bell), cast in 1447. I imagine that it takes its name from the sweet mellowness of its tone, for there is no silver in the metal. It is the curfew bell, and it tolls every night at nine o'clock for a quarter of an hour. As I listened to it evening after evening, a sense of the emptiness and nothingness of the greatest ambitions of our little lives involuntarily stole over me, as I thought of the many changes and chances upon which this curfew bell has shed its tones, while ringing out its nightly duty, now for nearly 500 years. Rouen has thirty-six fountains from which the inhabitants get their water supply. The Fountain of the Great Clock has above it a curious old sculptured bas-relief representing Alphæus and Arethusa.

Continuing our walk through the city we come to the suppressed convent of Sainte Marie, a building now used by the Government as the Museum of Antiquities. Passing through a quaint old doorway and vestibule we enter the courtyard of the museum. The custodian told me that this courtyard had not before been photographed. He permitted me to do so, and I must acknowledge his courtesy. The curious array of sculptured relics with which the courtyard is filled have each of them a history. For the most part they are the remains of ancient churches long destroyed. We must not stay to recount the priceless treasures contained in this museum. There are many Roman remains, among them the splendid mosaic from Lillebonne, mentioned before. Indeed, here are to be found relics of all ages of Norman and French history. But what interested me most in this museum was a faded and considerably decayed green silk bag containing the dust of the heart of our king, Richard Cœur de Leon—the last Duke of Normandy but one. Richard loved the Normans so greatly that, as you may remember, he bequeathed his heart to Rouen.

A large building, which is now-a-days the Halle du Coton, or Cloth Hall, for the sale of the Rouen manufactures, in former times was the castle or palace of the Norman dukes. In this building William the Conqueror is said to have received the news of the death of Edward the Confessor and the crowning of Harold. Here, too, King John is said to have imprisoned and murdered his nephew Prince Arthur. The mention of this, I have no doubt, will recall to your mind Shakspere's touching scene between Arthur and his gaoler Hubert.

We are now approaching near to the Cathedral. We can here see the lofty cast-iron spire, which we saw from the roof of St. Ouen, and the northern tower of the west front, the tower of St. Romain—the most ancient part of the building—and the southern tower, called La Tour de Beurre, or Butter Tower—so called because it was built with the money paid by the faithful who purchased the Papal permission to eat butter during Lent.

The west front of Rouen Cathedral now claims our attention. This façade was built by the first cardinal—the famous Georges d'Amboise—at the end of the 15th century. It is a splendid example of the florid style of Gothic architecture. It has a true rose-window, and a true rose-window, I believe, is somewhat rare in architecture. The three doorways are ornamented with bas-reliefs, which were much injured by the Calvinists in 1562. The central design represents the genealogical tree of Christ springing from the root of Jesse. The sculpture over the door on the left is the oldest. It represents the Beheading of John the Baptist, and, when examined closely, the daughter of Herodias appears to be dancing on her head. Over the right-hand door is the Virgin Surrounded by Saints, but this has been greatly mutilated. The authorities have hung a net over the central carving, in order to protect it from injury by those spirits of mischief who delight to throw stones, also from the birds.

We now enter the Cathedral by the west door. Halting first of all in the nave, we cannot fail to be struck with its length and loftiness. It is 435ft. long by 89½ft. high, and dates from the 13th century. In passing round the choir we pause before the monument erected to our great hero of the Crusades—Richard the Lion-hearted. Richard was buried at Fontrevault, but, as you know, he left his heart to Rouen. Digging on this spot fifty-one years ago, on the 30th of July, 1838, an effigy of Richard was found, which is shown here. The immense recumbent statue, 6ft. 6in. long, dates from the 13th century. It is hewn from a single block of limestone. The crowned head rests upon a cushion and the feet upon a lion *couchant.* When found the statue was not quite perfect, and the chin, the right hand, and the sceptre in the left, have been restored in recent years. All the rest of the face and figure is 600 years old. Very near to the statue was found a double leaden box, with this inscription in black letters, "Hic : jacet : cor : Richardis : Regis" ("Here lies the heart of King Richard"). Inside the box was found a green silk bag, containing the heart perfect. The bag and the crumbling heart are, as I mentioned before, in the Museum of Antiquities.

We pass round to the Chapel of our Lady, the most richly-decorated portion of the Cathedral. The altar-piece represents the Adoration of the Shepherds. The host is contained in a golden cabinet above the altar, before which a light is continuously burning. In the Lady Chapel are two splendid monuments. One is the tomb of Louis de Brézé, Grand Seneschal of Normandy. Above the tomb is an equestrian statue of the seneschal in white marble. He and his steed are clad in armour, and are fully equipped in all the panoply of war. Below, on a black marble sarcophagus, lies a white marble figure of the seneschal, stripped entirely of everything, and dead. The moral of the two sculptures is obvious: the grim hand of Death reduces the all-powerful general and governor, covered with glory, to the same common level as the rest of frail humanity. This monument was erected in 1531, by Diana of Poictiers, wife of Louis de Brézé, and she is represented in the attitude of mourning, kneeling at the head of her dead husband. Opposite to this monument is the most elaborate tomb in the Cathedral—that of the Cardinals d'Amboise, erected in 1525. The tomb is of black marble, and upon it kneel the two cardinals, uncle and nephew, both named Georges d'Amboise. Above them is a canopy richly ornamented and gilt; behind them is a bas-relief of St. George and the Dragon, the Virgin, St.

Peter, St. Romain, and other saints ; below are exquisite white marble figures representing the cardinal virtues, Faith, Charity, Prudence, Power, Justice, and Temperance. The intervening spaces are filled with rich and beautiful arabesques. This most beautiful work is said to have cost about a million of francs, *i.e.*, about £40,000. The bodies of the cardinals were torn from the grave by the Revolutionists in 1793, the lead of their coffins melted, and their remains dispersed. We can realise the antiquity of these monuments when we remember that Mary Queen of Scots, as a little girl, may have gazed upon them soon after they were erected. I would acknowledge the courtesy of the *curé* of the Cathedral—M. l'Abbé Sauvage—in allowing me to photograph the interior.

We now bid farewell to Rouen, and with it the Department of the Seine Inférieure, and the north bank of that river. Our journey takes us across the stream into the Department of Calvados, and we arrive at the quaint old town of Lisieux—the Lexovium of Cæsar. Lisieux figures frequently in history, and, to quote one instance, I may mention that Thomas à Beckett, Archbishop of Canterbury, lived in exile here during the time he was under the displeasure of Henry II. In the Marché au Beurre, or Butter Market, may be seen one of the peculiar carts with which the farmers in the surrounding country bring their produce into the town. On market-days it is a busy scene, the ground being almost entirely covered with baskets of butter, eggs, poultry, *et hoc genus omne*, brought here for sale. Lisieux is essentially a town of curious old houses, the quaint and irregular gables of which project over the streets. In some of the oldest streets this is the case to such an extent that, looking upward, there is only a small strip of sky visible. Through the city flows the river Touques, in which the Lisieux women do their laundry-work. Although perhaps a little strange to English eyes, it is a characteristic French scene. The projecting shed-roof serves as a protection from the weather ; the linen is soaped, beaten with a broad flat piece of wood called a "carosse," and rinsed in the running stream. Each woman brings her own soap, carosse, and sort of half box, in which she kneels while leaning over the river, and so keeps her skirts dry. In some instances the women pay about three half-pence a day for the use of the sheds, while in other cases they are free. We saw four women busy with their washing. The first one, kneeling behind a beam, was busily scrubbing ; the others were pausing, curious to see what I was doing with the camera ; the two further women had their work partly in and partly out of the water. The French seem to have a great idea of the washing being done in running water, and not everything all in the same water in the same tub.

We now journey to the ancient town of Falaise, famous in history as the birthplace of William the Conqueror. On one side of the town is the hill Mont Mirat, from which we get a comprehensive view of Falaise Castle, the early seat of the Dukes of Normandy, and in which the Conqueror was born. You probably remember how the Falaise tanner's beautiful daughter, Arlette, was washing linen in the stream which flows through this valley, just as we saw the Lisieux women doing ; how the Duke, Robert the Magnificent, seeing Arlette from the corner window of his donjon keep, gazed with admiration, and fell desperately in love with her. So runs the story of William the Conqueror's parents, and the remains of a small room in this grand old Norman keep are still pointed out as that in which he was born. Before the castle became a ruin it occupied all the space now covered by trees, and on this side there are only some ramparts now remaining. In 1418, Henry V. took this castle after a four months' siege. He cannonaded it across the valley, from a point on Mont Mirat. Henry put the castle in the keeping of the Lord Talbot, and the large cylindrical tower is still called La Tour Talbot (Talbot's Tower), either because he built it or because he once resided in it. The walls of the Talbot Tower are 10 feet thick. You may perhaps be able to realise better how very massive this is when I tell you that in the thickness of the wall there is a well and a large chimney. Formerly the Talbot Tower and the ramparts were a storey higher than you now see them. At the south-west corner there was a tower, called La Tour de la Reine, or Queen's Tower, and it was at this spot that the soldiers of Henri Quatre entered the castle in 1589, through a breach made by his cannon, during the last of the many sieges which the castle has sustained, The castle, the early home of William the Conqueror, is a splendid old ruin, and is one of the finest of the few old Norman fortresses now remaining in France.

Descending from the castle into the town, we find in the Grande Place a bronze equestrian statue of the Conqueror, the great hero of Falaise, his native town. It in a powerful and spirited work. William's charger is in the act of plunging forward, and we seem to see him actually waving on his soldiers, with his uplifted hand and pennon. He is clad in a suit of chain-mail armour, and his casque is surmounted by the ducal coronet. It also has a piece of metal attached to it to protect the nose. While we gaze at the statue we are able to realise to some extent, in the words of an able writer, "The gigantic mental power of the man, who, though he could only sign his name at Rouen with a cross, could quell the power of his fierce Viking barons as well as the external foes of his dukedom, and conquer such a kingdom as England." Round the pedestal are figures of the earlier Dukes of Normandy, William's ancestors. On the left of the statue is Richard the Fearless, great-grandfather of William. Next, in the centre, is William Longsword, father of the last duke. The figure at the right corner is Rolf, or Rollo, the first Duke of Normandy. Then at the further corner, with his back to us, is Robert the Magnificent, father of William the Conqueror.

Now-a-days, Falaise is rather a dull sleepy town, but nevertheless its population numbers a good many busy workers in the cotton trade. The Rue Val d'Aute, is a street which takes its name from the small river which flows through the town. To all appearance this is a sufficiently quiet-looking street, but the amount of industrious energy concealed here would surprise you. In every house are men turning large knitting machines by hand, knitting cotton jerseys such as are worn by sailors, from large cops of coarse yarn, spun in the Rouen mills. The women are busy with sewing machines, stitching sleeves in, and finishing off the garments ready for sale. As you pass down the street you hear quite a buzz and hum from the machines at work in the houses. Some of the women bring their sewing machines out into the air. I am afraid that the lapse of centuries must have told upon the good looks of the ladies of Falaise, for I saw no young woman who seemed likely to pass muster as a modern Arlette !

After seeing the birthplace of William the Conqueror it is fitting that a Briton should see the place where he is buried. We therefore now go on to Caen, the chief town of the Department of Calvados. Caen has been described by a French writer, Madame de Sévigné, as "the prettiest town, the most inviting, the gayest, the best placed; it has the handsomest streets, the finest buildings, the most beautiful churches, meadows, walks, and, finally, it is the cradle of all our wits." Without going quite so far as Madame Sévigné, I think we shall find much to interest us at Caen.

The Place Royale has one side occupied by the Hotel de Ville, or Town Hall, over the classic portico of which the French tri-colour is waving. In this building are comprised, in addition to the municipal bureaux, a museum of pictures, a free library, the prefecture of police, and the post office. In this Place a military band plays on certain afternoons. On these occasions there is a race to occupy all the public benches, but the more comfortable cane-bottomed chairs, for which a penny or twopence has to be paid, go begging. It is, however, not so much the modern buildings which interest us, but those of olden time and historical value. Caen seems to be particularly rich in those grand and curious old houses which the good people of the 16th and 17th centuries delighted to build. As we walk up the Rue St. Pierre we cannot help pausing for a moment opposite one of these quaint old houses. The old oak beams, which form a great portion of the front, are curiously carved with bold and original designs. They are a strange contrast to the modern edifices of stucco and brick which surround them on all sides. The old carvings on these ancient houses, for the most part, are in wonderfully good preservation, and were I to attempt to describe them—the figures in ancient costume, the pigs blowing whistles, the dragons with serpents' tails, and so forth—I am afraid you would become utterly weary of listening. In an adjoining street there is still pointed out an old house which was the Caen home of Charlotte Corday.

You will all be familiar with the history of this high-souled girl, "to whom," to quote a French writer, "it only needed to have read the New Testament in place of Plutarch."

There is another curious old building in Caen, built in the reign of Louis XII., and called La Tour, or La Maison des Gendarmes, *i.e.*, the tower or house of the men-at-arms. It takes its name from the two figures at the top of the tower. They are two soldiers—armed originally one with a bow and the other with a cross-bow. They are now somewhat mutilated. This house resembles in appearance a little fortress, with its mechanical parapet and grated windows. It was not, however, built as a place of defence but as a private residence. The tower has been fantastically decorated with sculptured medallion heads of emperors, kings, generals, and so on. But these are not the most historically important buildings of Caen, and those now claim our attention.

Some years before he invaded this country, William the Conqueror built a castle at Caen in order to keep his mutinous vassals in subjection. This castle was fortified by his son, Henry I. Now-a-days it is used by the French as an infantry barracks. We can see the massive gateway of the castle, in the archway of which there generally is a sentry on guard. Below is the ancient moat, now quite dry, and turned into a vegetable and flower garden. There still remain the long projecting levers used for raising the drawbridge. In this castle it was that William, in the year 1061—five years before he came to England—ordered a bell to be rung for prayer every evening, at the sound of which all people were to retire into their houses, and close the doors. This is considered a proof that William established the curfew in Normandy before he introduced it into England. In the time of our king Stephen this castle was captured by Geoffrey, Count of Anjou ; and Froissart tells us that the castle and town of Caen, owing to the cowardice of the townsmen, became an easy conquest to Edward III. and the Black Prince, just before the battle of Crecy.

A very prominent object in the town is the ancient and now disused Church of St. Etienne. This church, on the authority of some French antiquarians, is believed to be the oldest parish church in Caen, and it is said that William heard mass in this church just before starting for the invasion of England. Very little of the original fabric now remains, as it frequently suffered damage in the fierce and turbulent times of the 11th and 12th centuries, and was as often restored. The ruin now left is a fine specimen of the pointed Gothic of the 15th century, with here and there remains of much earlier work. The old boundary wall of the churchyard is of great thickness, and is about a yard thick. It was formerly fortified.

This ancient ecclesiastical building is now used by the municipal authorities as a storehouse for carts, vehicles, firewood, and odds and ends of many kinds.

When Caen is approached by water, the towers of two abbeys are seen rising in massive grandeur, one on the right and one on the left of the town. The Duke William and his Duchess Matilda were ordered by the Pope to rebuild two houses consecrated to God, one for men and the other for women, as an atonement for their somewhat irregular marriage.

They decided to build each an abbey at their favourite town of Caen, and these two abbeys, the Abbaye aux Hommes and the Abbaye aux Dames, are lasting monuments of the piety of the Conquerer and his queen. The splendid building of the Abbaye aux Dames, more than 800 years old, is a pure specimen of the Romanesque style of architecture. We read that as soon as the conquest of England was resolved upon, Matilda seems to have hastened the building of her abbey, that it might be consecrated before her husband set out on his great enterprise, and thus insure for the expedition the blessing and countenance of heaven. As part of the consecration ceremony, the ducal pair, desiring to offer a gift more costly than lands, or buildings, or jewels, dedicated their eldest daughter Cicely, as "a virgin set apart for God's service." In after days, Cicely became the renowed abbess of her mother's foundation. Inside the abbey is Matilda's tomb.

The tomb suffered much during the Huguenot disturbances, but the queen's remains were preserved uninjured, also the marble slab containing her epitaph, which has been translated thus :—

"This stately monument, Matilda's name,
In gold and marble, gives to endless fame;
High was her birth, sprung from a royal race,
To which her virtues lent a noble grace.
When Conquering William made her England's Queen,
T'was here her noblest, holiest work was seen ;
This fane, this house, where cloistered sisters dwell,
And with their notes of praise the anthem swell.
The sick, the indigent partook her store,
She laid up wealth by giving to the poor ;
To heaven, by pious deeds she won the way,
Departing on November's second day."

Queen Matilda died on November 2nd, 1083.

The conventual buildings of the Abbaye aux Dames are now converted into a hospital.

Passing right to the opposite side of the town we come to William's abbey, the Abbaye aux Hommes, which is altogether on a more extensive scale than the Abbaye aux Dames. Unfortunately it is so closely surrounded by buildings that it is impossible to get a good exterior view of the abbey. The lofty towers of the west front are very fine, and the whole structure is a splendid example of the Normano-Romanesque style of architecture. There was once a spire upon the central tower, but it was much injured by Henry V., who placed his cannon on the tower when he besieged the town. The tower was finally destroyed by the Calvinists in 1562. The ancient monastic buildings, hidden by trees, have been modernised into a *lycée* and *école normale, i.e.*, a college or public school.

The somewhat pretentious bronze statue standing in the open space before the railings represents the French king, Louis XIV., in the costume of an ancient Roman general. This Louis, you may remember, was a great patron of the dramatic art.

The nave of the Abbaye aux Hommes was begun in 1064, two years before William invaded England, and it was finished during his lifetime. I have already alluded to the motive of William and his Queen in building these two abbeys—and, indeed, carrying warfare across the sea into England was in those days considered so great and hazardous an undertaking as to call for special works of devotion. This feeling actuated not only William and his queen but also his barons and vassals. The nave, in which we are supposed to be standing, is the most ancient part of the building, and for 800 years has looked down upon the calms and the storms which have animated the bosoms of succeeding generations who have trod this sacred floor.

The choir beyond dates from the 13th century, and is therefore not quite so old as the nave. A short time ago we saw at Falaise Castle the birthplace of William; here, in his abbey church, is his last resting-place. Here, as we gaze at these ancient pillars and arches of such massive strength, and at the curves of this vaulted roof, we feel instinctively that we are in the presence of a work of consummate genius, and that this noble building is a fitting tomb for the Conqueror of England, the mighty monarch, the central pivot upon which revolves the whole fabric of our national history. Call to your recollection the circumstances of William's burial; how that mmediately he expired one son, William Rufus, hastened to England, to secure the crown; how another son, Robert, Duke of Normandy, was away at the French Court; and how the youngest son, afterwards Henry I. of England, alone was present at his father's funeral as chief mourner. William Rufus and Henry afterwards erected a magnificent tomb over their father's grave, but this was destroyed by the Calvinists, in search of treasure, 300 years ago. A plain grey marble slab at the foot of the high altar marks the place of William's grave. The simple Latin inscription on the stone runs as follows :—

Hic sepultus est	Here is buried
Invictissimus	The most invincible
Guilelmus	William
Conquester	the Conqueror,
Normanniæ Dux	Duke of Normandy,
Et Angliœ Rex	King of England,
Hujusce Domus Conditor.	Builder of this House.
Qui obiit Anno	Who died in the Year
MLXXXVII.	1087.

A walk of two miles from Caen brings us to a well-preserved Gothic abbey building, known as the Abbaye d'Ardennes, and looking at it you would say, "That is a church!" Nothing of the kind! It is only a barn, and on the day in June when I was there I saw load after load of hay carried through the beautiful portal and stacked inside the building. "To what base uses may we not return!" This fine old abbey church is now a farmer's barn, and the surrounding conventual buildings are now the farmer's house and his labourers' cottages. I made friends with the farmer's wife, who gave me a capital glass of her own cider, and after my return home I sent her a photograph of the buildings. The abbey church dates from 1121, and among the names of its benefactors are those of Richard I. and King John. The Abbaye d'Ardennes has a special interest for us, in that it was built upon very similar lines to our English Abbeys of Bolton and Newstead. The circular window, a rose with a pointed arch, is a somewhat peculiar feature, being a combination rarely met with in architecture. The monks of this abbey are said to have been very wealthy. I do not know how this may have been, but, at all events, one of the reasons for this belief was that they possessed a very large amount of cellarage for their stock of wines!

The country people of this western district of Calvados are very superstitious and have great faith in magical traditions, which have been handed down for generations. Some of these traditions are pretty and interesting, and as we wander along the bank of the river Aure towards the ancient city of Bayeux, I will instance one of them. There once lived near Bayeux a knight named Argouges. He loved, wooed, and won a beautiful fairy. She became his wife, on the condition that he was never to speak of *death* in her presence, and he was warned that if he did so she would instantly vanish. Now, one day, they were to go out together, and she was so long in getting ready that he lost patience, and forgot the warning. He called to her, "Good dame, thou wouldst be a good messenger to send in search of Death, for thou wouldst take so long on the journey!" In answer to this came a long despairing wail, and the fairy wife of Argouges faded out of his sight for ever, murmuring "Death, death." I think this old legend has an obvious moral. Husbands, don't begrudge your ladies the few moments necessary for the proper adjustment of bonnet-strings and such paraphernalia ; and ladies, don't forget the gentlemen patiently waiting for you downstairs ! Through the trees you get a distant view of Bayeux Cathedral. It is so shut in by buildings that it is impossible to get a near view of it from land. You see, however, the 12th century spires, on the western tower, and reflected in the water you may make out the open cupola surmounting the central tower. Bayeux is a quaint, old-world place, and in our next view we seem to have gone back a hundred years. The old-fashioned plan of street lighting is most quaint. From the top of a tall pole on each side of the street is slung a wire cord, from which is suspended an oil lamp, and similar oil lamps are suspended at regular intervals, thus illuminating the street. The streets of London, Manchester, and our large towns used to be lighted in this manner in former times, and before the introduction of gas. Compared with gas these oil lamps are not of much use. By daylight, if you are imaginative or poetic, they rather suggest the idea of a colossal spider upon one of the threads of its web, and the ease with which the lantern can be lowered explains the terrible "*A la lanterne!*" of the revolutionary times. I found some little amusement in watching the lamplighter, an old woman, who carried a smoky horn lantern, and who was accompanied by a dog. Unfastening the cord, she lowered the lamp, lighted it, wound it up again, and refastened the cord ; then she went slowly on to the next lamp, and repeated the operation. Each lamp thus took from five to ten minutes to set going, and at each lamp the old woman's elderly dog had an opportunity to lie down and indulge in a short dose. Contrast this state of things with the rapid movements of the modern lamplighter.

The good people of Bayeux, in addition to being superstitious, are simple-minded, and hold in great reverence all things appertaining to Holy Mother Church. We are therefore able to see here ecclesiastical processions which have become quite obsolete in Paris and the large busy towns, and which nearly resemble those which took place in our own country in the middle ages. These processions only take place on two Sundays in the year. On the occasion of the Fête Dieu—the Festival of God or the Holy Spirit—the devout townspeople stretch long pieces of white calico or muslin, decked with flowers, on each side of the streets, which are then strewn with leaves or ferns. Here and there, in convenient positions, is erected an altar, or *reposoir* as it is termed. These *reposoirs*, or street altars, are profusely decorated with flowers, moss, foliage, candles, and ecclesiastical ornaments. The procession arrives. The host, carried in a golden vessel, by a priest in gorgeous robes, under a magnificent scarlet and gold canopy, and surrounded by acolites swinging censers of incense, is deposited upon the altar, a prayer is chanted, and the chief priest pronounces a benediction, with much swinging of incense and scattering of holy water upon the bareheaded kneeling people in the street. The procession is then reformed, and marches on until it comes to the next *reposoir*.

I was fortunate in being at Bayeux on the occasion of the Fête Dieu, on Sunday, the 30th June, when I secured a photograph of one of the *reposoirs*, that in the Rue St. Malo, before the arrival of the procession, and the crowd of open-air worshippers. The next morning, Monday, I came again to the Rue St. Malo. A wonderful change had been effected in the appearance of the street. The white cloth had disappeared from the sides of the street, and not a trace of the *reposoir* was left. There was nothing to tell us of yesterday's procession, except some heaps of leaves, which yesterday carpeted the street, but were now swept up, ready for carting away. The street had resumed its work-a-day appearance.

The tailors in this part of the world, I may remark, have apparently immense faith in the great persuasive powers of their dummy figures, for their shops are crowded, inside and out, with an array of these dressed-up blocks, of all sizes, shapes, and colours, from the elaborately-got-up masher to the nigger with a ring through his nose!

A few steps from this street takes us to the Cathedral of Bayeux, of which we had just now a distant peep through the trees. I saw the firemen of Bayeux, or the *pompiers* as they are called, attending mass in the Cathedral. They made a brave show with their fire-axes, rifles, bayonets, plumed helmets, and beating drums—the only thing they seemed short of was the fire-engine. But I suppose they could hardly take that to church with them. The three west porches of the Cathedral are built in the florid style of the 13th century, and they deserve attention for the bas-reliefs over the doors. The figures over the left door in particular are beautifully carved. They illustrate the Passion, Crucifixion, and Resurrection of our Lord. The Cathedral is famous for the capitals of its inside pillars. These capitals, 2,976 of them, are each one sculptured differently. Passing through the nave, the ancient Norman zig-zag over the arches, and the diapered patterns wrought in the walls, should be particularly noticed.

In this Cathedral the famous Bayeux tapestry was formerly kept. This ancient tapestry is, however, a document of such important historical evidence, that it is now carefully preserved in a glass case in the Museum. The Bayeux tapestry is a strip of coarse linen, 20in. broad and 212ft. long, just exactly the width of the nave of the Cathedral, across which the tapestry used formerly to be exhibited. It consists of fifty-eight subjects or pictures, representing the history of the Norman Conquest, from the death of Edward the Confessor and Harold's coronation to the battle of Hastings and Harold's death.

I will only refer to two parts, of which I obtained photographs. One is No. 23, in which Harold, when he was sent as a messenger by Edward the Confessor, is shown standing between two small altars, and taking an oath to William, who, you see, is enthroned and carrying his sword of state. The other subject is No. 35, and represents William seated in his palace, receiving the news of Harold's accession to the throne, and immediately ordering ships to be built for the invasion of England. On the right are men obeying the order, and cutting down trees with which to build the ships.

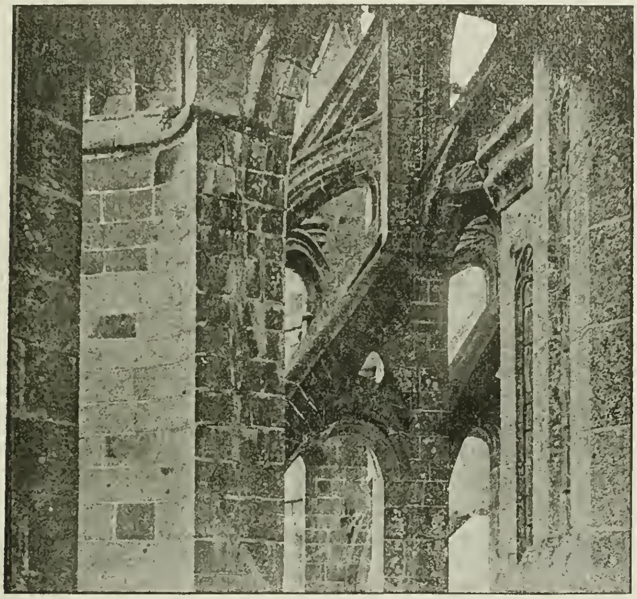
The Bayeux tapestry is generally believed to have been embroidered by William's queen, Matilda, and her court ladies. It must have been a most laborious piece of work, for it contains as many as 1,512 figures. It is nearly 900 years old, and the white linen is brown with age. The embroidery is in different coloured worsteds. It is very crude, and there is no attempt at shading or gradation of colour—thus we find a green horse next a blue or yellow one. Very possibly a good reason for this may be, that in those early days very few colour dyes were known. This ancient piece of needlework is in wonderful preservation, and is regarded by historians as most valuable evidence, not only of the events, but also of the manners, customs, and dress of that period (1066). Freeman, the historian, shows that one proof of the antiquity of the tapestry, and of its genuine connection with the Norman court of William, is that obscure persons are mentioned by name on the Norman side, of whose names and deeds there is no other historical record. Freeman inclines to the belief that the tapestry was designed by William's warlike brother, Odo, Bishop of Bayeux, as an ornament for his, then, new cathedral, and across which the tapestry just fitted, as we have already noticed. Napoleon Bonaparte caused the tapestry to be exhibited in the theatres of the French towns, with a view of inciting the people to another conquest of England, and so emulate their deeds of ancient times. The battle of Waterloo, however, put a stop to these proceedings. Some historians are disagreed as to whether the tapestry was really the work of Queen Matilda and the ladies of her court, as is generally credited. Agnes Strickland, in her work on the "Queens of England," settles this debatable matter by recommending the "lords of creation to leave the question of the Bayeux tapestry to the decision of the ladies, to whose province it belongs." And there, if you please, I will leave it !

We now quit Calvados, and entering Manche, the most western department of Normandy, we arrive at Coutances, a city which stands upon the site of the ancient Roman Constantia. A cathedral has stood here for about 1,000 years, but all traces of the original building were destroyed after the battle of Poictiers. The present building was then erected. It dates from the early part of the 13th century, and is one of the finest ecclesiastical buildings in Normandy. Repairs, of course, cannot be neglected nevertheless, I very much regret that when I was there the right-hand spire was enveloped in so much scaffolding as to prevent my taking a satisfactory photograph of the two towers and spires. They are, however, exactly alike in every detail. The west front of this cathedral towers above the surrounding houses, and from that you may be able to realise its great height. When I photographed it, the market was actively going on, but the stalls, carts, and market people seem almost too small to be noticeable.

The road from Coutances to Granville descends a steep hill to a valley ; on the further side of the valley rises another hill. From hill to hill across the valley there was in ancient days a Roman aqueduct. That aqueduct was destroyed by the Normans. Another aqueduct was erected upon the ruins in the 15th century. The aqueduct was carried upon sixteen arches, of which there are only five now remaining. This ancient aqueduct is now grown completely over with ivy. The buttressed piers of the other arches, covered with ivy and creepers, still stand like a row of pillars across the valley. From this the little village which has sprung up in the valley takes the name of Les Piliers, *i.e.*, The Pillars.

We now arrive at the most westerly point of the Norman coast, and the last stage of our ramble. Out of the vast expanse of sand there rises a solitary granite rock, 300 feet high. It originated, no doubt, in some volcanic upheaval, and its very isolation in a horizon of sea and sand invests it with something of the mysterious and supernatural. According to the legend, Michael the Archangel appeared twice in a vision to St. Aubert, bishop of the neighbouring city of Avranches, and commanded him to build an abbey on the sumit of this rock. Aubert was incredulous. Then St. Michael appeared to him a third time, and repeating his command, laid his finger upon Aubert's head. Aubert, when he awoke in the morning, found a great indentation in his forehead, the shape of the archangel's finger. Believing it to be a call from God, he collected the funds, and built the abbey on the summit of this rock, which was then called, after the archangel, St. Michael's Mount.

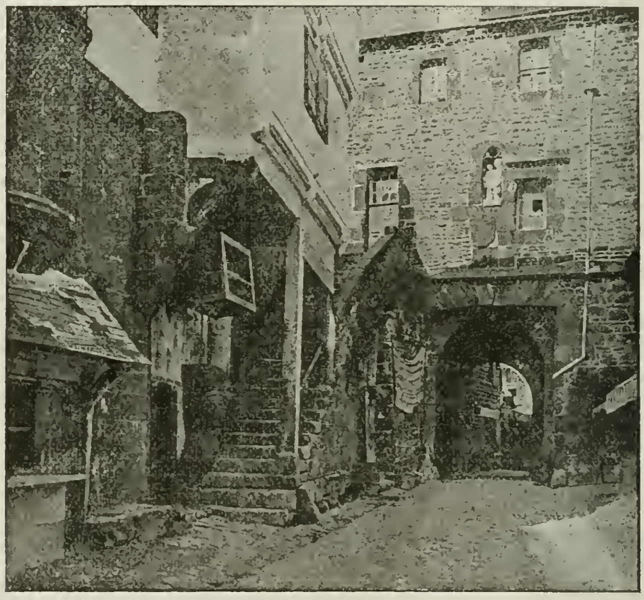
In the turbulent times of its early career the abbey was frequently pillaged by its lawless neighbours on the mainland ; and as a defence, the Mount was surrounded by a wall with bastions, and the abbey itself was fortified. We find here, therefore, the remarkable combination of abbey, church, fortress, and dungeon. It is very interesting to be able to see some of these things, and climb by easy stages right to the very top of the abbey church. At high tide the seas completely surround the Mount, sometimes even breaking into the houses. It is a most dangerous shore, for at low water, the sands are little better than quicksands, "so full of treachery," says one writer, "that a track, firm overnight, will suck in an unsuspecting traveller next morning." The tide, too, which goes out a long way, rushes in with such velocity, that if out on the sands it is necessary to run for dear life in order not to be overtaken. Many lives have thus been lost, and I will mention one case. M. de Bothmilian, an artist, was so absorbed in his sketching that he did not notice that the tide had turned, and before he could escape he was overtaken and drowned. One evening I took a stroll along this sand, and returning in a quarter of an hour I was obliged to make my way over the wooden gangway into the town. Owing to the uncertain tides and these quicksands it is unsafe to venture on the sands without a guide. A fishing gentleman, who rejoices in the sobriquet "Le Marquis de Tombelaine," was my guide. I am afraid he is rather a humbug. Ostensibly he is a fisherman, but in the tourist season he makes more money by hanging about the doors of the hotels, piloting visitors and being treated. However, he carried my apparatus in his panier, and was very useful to me. No doubt, in the off season, he has to work hard enough at his calling. When I left Mont St. Michel, we shook hands most warmly at parting. It is altogether a fishing population at St. Michael's Mount, and the women work as actively as the men.



Mont St. Michel.—Double Flying Buttress.

I was fortunate in catching a party of the fishing women just setting off to their work. I had great difficulty in making them understand me, and I could not understand a word of their dialect of French, but, by dint mostly of dumb-show, I managed to get three of them to wait a moment, until I photographed them. Their faces and limbs are a copper-coloured brown, from exposure to sun and weather. They tie a string round their skirts, and when they get out into the deeper water they just pull their skirts higher up through the string, which then holds them in that position. When they return, their catch is bought by a dealer, also a woman. The noise and din made by the women over their bargaining is something terrible to listen to ; it cannot be described to ears polite. These fisherwomen earn from eighteenpence to two shillings a day.

Entering within the rampart through a little gateway, we find only one street in St. Michel. The rock was so strongly fortified, that at the entrance there are three separate gateways, each a short distance within the other. The last of these gateways is called the Town Gate, and you may still make out fragments of the old portcullis. The building over the archway is now used as a day school, in which children are taught by Sisters of Mercy. Through the archway you can see a portion of the principal hotel, justly celebrated for its omelets, and I can confidently recommend you to the tender care of the charming hostess, Madame Victor Poulard. Some curious steps lead round the schoolhouse to the abbey buildings high above us. They also lead, or rather only 105 of them, to a *dépendance* of the hotel, containing the best bedrooms, mine among them ! The steps twist about a good deal, and are considerably worn, and I should think, therefore, that they would probably be rather bothering to anyone who had been spending the evening pretty freely. Climbing up the rock, we come to the subterranean portion of the abbey, or more correctly speaking, as it is high above where we have just been standing, the portion cut into the heart of the rock itself. A flight o steps at the end of a long dark passage takes us down into the marvellous Crypte de l'Aquilon. These arches and pillars, with carved capitals, date from the 12th century. Originally there stood here an altar to the Virgin, and the image of her, quite black with age, is still preserved in another part of the building. In the



Mont St. Michel.—Porte du Roi.

middle ages this crypt was turned into a prison. On the right is a pitch-dark passage, leading to horrible dungeon cells, where a ray of daylight never enters—where, too, are the fearful *oubliettes*, those terribly deep pits, in which, the prisoner once dropped, was never heard of more. Who has not heard of the iron cage of Mont St. Michel? The cage was through this dark doorway—a hollow in the thickness of the wall, closed in with iron and wooden bars, and so low that a man cannot stand upright. He must either kneel or lie prostrate. You will all remember the fate of Dubourg, a state prisoner of Louis XIV., who 250 years ago perished in this horrible confinement, devoured alive by rats.

In 1863 Mont St. Michel ceased to be a prison, the French Government transporting their convicts to New Caledonia; and in 1874 the Government declared the Abbey-fortress of Mont St. Michel a national historical monument. In the church are several remarkable old bas-reliefs, sculptured in ancient days by some of the state prisoners, who practised carving to while away the tedium of their incarceration. Having ascended into the church, we pause a moment before one of these bas-reliefs. It represents the Descent into Hades. The carving is of great age, and like some of the others is somewhat grotesque. I interpret it to mean that the Saviour is desirous of saving all those who trust in Him and his Cross, while the devil, represented in the guise of a dragon or lizard, is trying to scrape as many as he can into his net. It also suggests the interpretation that those whose faith is centred in the Saviour triumph over the powers of darkness. The carving is painted in the most vivid colours, and looks most curious and quaint. In the abbey building on the north side of the church is a noble and beautiful hall of 13th century work. It is known as the Salle des Chevaliers, and I was able to obtain a photograph of it. In the exchequer accounts of the abbey, for the year 1203, are items for the maintenance of the knights and men-at-arms kept at the monastery at the expense of the Dukes of Normandy. They lived in this Salle des Chevaliers. When Louis XI., 200 years later, instituted the Orders of the Knights of St. Michel, this splendid hall was used as their chapter-house. The hall is 98 feet long, and the elegantly-groined roof is carried upon two rows of pillars with richly-carved capitals. The huge projecting fireplace dates from the year 1496, and is so large that some twenty people can comfortably stand inside it. Standing in this grand, light, airy hall, we can realise more forcibly the horror of the gruesome dungeons deep down below us, and the atrocities which were perpetrated there.

We now go right through the ceiling of the hall into the cloisters, which are built upon the top of the Salle des Chevaliers. You notice that we keep ascending higher and higher, and here, upon the highest storey of this immense structure, we are quite 300 feet above the sands upon which we stood just now, when we had a general view of the rock. These cloisters, built between 1220 and 1228, are considered the most beautiful part of the building, and a gem of Gothic architecture. The court is the roof of the Salle des Chevaliers. Towards the court the cloisters are supported by a double row of pointed arches, resting on slim granite pillars, of which there are 200. The pillar of one arch alternates with the point of the next. The spandrels of the arches and the cornices are beautifully carved with twigs, flowers, and garlands.

The cloisters of an abbey, as you, of course, know, are a kind of passage, with a roof overhead, but open at the sides, in which the monks could take their daily prescribed exercise in the open air, and still remain protected from the weather. We can imagine the delight which, while taking their walks round this quadrangle, the old monks must have felt in the beauty of their cloisters themselves, and in the far-reaching view towards the mainland which they enjoyed from this lofty eminence.

Pleasant fellows were some of these old monks, and not altogether insensible to the good things of this world. For instance, one of them, writing of Mont St. Michel, describes it as "a little town full of honest folk, who have, however, nothing worth frying." The monks loved, and were very proud of, their rock-fortress-abbey, for it is recorded that they named it the "Palace of Angels," a title not inapt, as applicable to the summit of the granite rock on which it stands.

We finally arrive at as lofty an altitude as it is possible to attain, for we are standing upon the roof of the Abbey Church, gazing at one of the wonderful double flying buttresses of Mont St. Michel. These buttresses have been compared to a piece of lace, from their open work, and the manner in which they have been interwoven. When we consider their lightness and strength, and the intricacy of their design, we are lost in wonder at, and admiration for, the skill of the architects of those early ages. It is matter for conjecture as to how the large blocks of stone were raised to this great height above the rock. These double flying buttresses support the roof of the choir, and at this giddy height, 400ft. above the sands, the wind whistles through the open work. It is very probably owing to the enormous increase of strength given to the building by these buttresses that the fabric has been enabled to withstand the storms of centuries. Here and there plants and weeds are growing in the crevices between the joinings of the stone of this ancient building, and I have at home now some stonecrop and some valerian which grew at this spot, and which I value greatly, as coming from the highest pinnacles of the high rock of Mont St. Michel. And now, having taken you as near to the heavens as I can, I will leave you to descend to this terrestrial sphere at your own good pleasure! But with all seriousness, in conclusion, I beg those of you who possess a more intimate knowledge of Normandy than I, to look kindly upon my address this evening. In attempting shortly to describe a country so closely bound up with our national history, from which our language and literature is so largely derived, and which affords so much of deep interest to the artist, the architect, the antiquary and the historian, I cannot but feel how inadequately I have fulfilled my task, and I can only say, in the words of Shakspere—

"Pardon, gentles all,
The flat unraised spirit, that hath dared,
On this unworthy scaffold, to bring forth
So great an object."—*Henry V., I., Chorus.*

Ben Nevis Observatory.—A few years ago there was not a single high-level meteorological observatory in the United Kingdom. This want became the subject of discussion in 1877, when the late Mr. Milne Home suggested Ben Nevis as a suitable site, being the highest summit in these islands (4,406 feet) and in the track of the south-west storms from the Atlantic. On October 17th, 1884, a permanent observatory was opened, and placed in charge of Mr. Omond, of Edinburgh. The observations carried out under his superintendence, and recorded every hour in the twenty-four, have been most instructive; but Dr. Buchan points out that their value would be greatly enhanced by comparison with a companion set taken at the sea-level, whereby the condition of the intervening stratum of air, which must have an effect in checking or accelerating atmospheric disturbances, might be clearly ascertained. With the help of a grant of £1,000 from the committee of the Edinburgh Exhibition, an observatory has been erected on the shores of Loch Linnhe, and has been furnished with instruments by the London Meteorological Society. It is connected by telegraph with the one on the summit, and is in full working order, under the charge of Mr. Rankin, Mr. Omond's assistant.

GEOGRAPHICAL EDUCATION.

REPORT TO THE COUNCIL BY THE EDUCATION COMMITTEE.

The Education Committee of the Manchester Geographical Society have been prosecuting inquiries in continuation of the report made to the Council in 1885, on the subject of Geographical Education in the district.

The following questions were asked in the first instance in relation to the question of Education, and the replies in this case are directed to the same points :—

QUESTIONS (see p. 313).

1. To what extent is Geography taught in your school or institution, and how much time is allotted to it per week? Also, is it taught as a separate subject?

2. Are prizes offered for proficiency in the subject?

3. The methods and appliances used in teaching the subject, and particularly what textbooks are used. Also, what other books or maps are either at the disposal of or employed by (*a*) the teacher (*b*) the pupils?

4. What are the special hindrances, in your opinion, to the thorough and scientific teaching of the subject?

5. If an institution, what provisions have you for Geographical lectures?

The replies on the present occasion have been as follow :—

PROFESSOR A. W. WARD, *Litt.D.*, *Principal of Owens College* (*see p.* 315).*

Owens College, Manchester, June 9, 1890.

Dear Sir,—In addition to the courses mentioned in the Report of 1886, we have now established courses of Evening Lectures on Commercial History and Geography in this College, of which that on Commercial History and that on Commercial Geography in all probability likewise will be given during the Session 1890-1. These courses will prepare candidates for the Victoria University Commercial Certificates, the requirements for which in these subjects will appear from the paper which I enclose, but they will be also suited to other hearers.

COMMERCIAL GEOGRAPHY AND STATISTICS.

(*a*) Sources of Production of (1) Chief Food-stuffs and (2) Raw Material of Manufactures.

The chief places of manufacture.

Export and import statistics : The various countries distinguished with reference to the nature of their respective trades.

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* The page numbers refer to previous communications, reports of which will be found in Vol. I. of *The Journal of the Manchester Geographical Society.*

(*b*) The Commercial Geography and Trade of England.
General outlines.
Chief agricultural, pasture, and manufacturing districts.
Coal districts.
Means of communication : Railway and canal systems.
Principal ports and commercial towns.
Trade statistics : Sources of supply, and chief foreign markets.

(*c*) The Commercial Geography and Trade, giving details, as defined in the foregoing, of *one* of the following :—

India and China.
Africa.
France.
South America.
Germany.
United States.

Commercial and Industrial History.

General sketch of the commercial history of England, with particular reference to the growth of industries and foreign trade since the era of mechanical invention.

The history of *one* of the following :—

1. Banking : Its nature, importance, and growth. The Bank Charter Act, 1844. Its suspension. The growth of joint-stock banks.
2. Cotton trade : Its growth, chief localities for manufacture, markets, and sources of raw products. The commercial organisation.
3. Woollen trade : Its growth, chief localities for manufacture, markets, and sources of raw products. The commercial organisation.
4. Iron and steel trade : Its growth, chief localities for manufacture, markets, and sources of raw products. The commercial organisation.
5. Some other trade to be approved by the Board of Studies.

I may add that Physiography is now one of the optional subjects for the preliminary examination of candidates for the Arts and Science Degrees of the Victoria University.

The establishment of a permanent Lectureship in Geography at this College remains a project only, but the time may not be distant when it will be realised, perhaps with the help both of the Royal Geographical Society, which looks favourably upon the scheme, and of our own Society in Manchester.

Rev. M. G. GLAZEBROOK, M.A., *Head Master of the Grammar School, Manchester.*

Dec. 4, 1890.

Dear Sir,—I will answer your questions in order, but pressing engagements compel me to be brief. (1) Throughout the lower school, which contains nearly two-thirds of the boys, geography is taught as a special subject twice a week. In the upper part of the classical side some ancient geography is taught, mainly in connection with history. In the upper part of the modern side we are just making a change, and the teaching in future will be on the lines laid down by the syllabus issued by the Manchester Chamber of Commerce. (2) There are no special prizes for geography. (3) In the lower school we use some of the text-books published for the use of elementary schools, but the masters supplement these largely by oral teaching, and by constant reference to the wall maps, of which we have a good supply. In the upper part of the school the teaching is mainly oral. I am afraid I cannot undertake to give you a list of our maps, or of the geographical works in our library. (4) The great obstacle to the teaching of geography seems to me to be the want of a definite conception in the public mind as to what that subject includes, and what kind of results are to be aimed at. At present geographical text-books, which more or less represent the public mind, are generally a jumble of geology, anthropology, politics, commerce, and map-making, arranged on no definite principle. If the province of geography could be clearly defined the work of the teacher would be much simplified.

MISS ELIZABETH DAY, *Head Mistress of the High School for Girls, Dover Street, Chorlton-on-Medlock, Manchester* (*see p.* 319).

May 24, 1890.

Dear Sir,—We have added a few geographical books to our library since 1886, but have made no other change worth mentioning. The school is closed till Tuesday week. I will send you the names of the new books when it re-opens, but if you want to reprint before that, my answer will do as it stands. It is still substantially correct.

The HEAD MISTRESS *of the Training College for Women, Liverpool* (*see p.* 319).

Training College, Mount Pleasant, Liverpool.

Dear Sir,—I am directed to thank you for the copy of the report on Geographical Teaching, and to inform you that the answer on page 10 still holds good in substance.

MR. J. J. CARDWELL, *Professor of Commercial Geography and History, St. Bede's College.*

St. Bede's College, Manchester, June 6, 1890.

1. (*a*) Taught in all the forms throughout the college. Time averages three hours per week.
   (*b*) Taught as a separate subject.
   (*c*) Range of teaching. (See enclosure A.)
2. (*a*) Yes. General Geography enters like any other subject into all competitions, such as the *daily marks*, and also the annual *form prizes*, prizes for individual subjects not being awarded in any case.*
3. (1) *Textbooks:* General Geography used in all the forms, Chisholm's "School Geography" and "Questions" (Longman's). Commercial Geography, Casartelli's "Notes on Commercial Geography." Cardwell's "Introduction to Commercial Geography, Map Drawing, and Projection from Memory" (John Heywood's).
   (2) *Maps:* A selection of maps are hung in the corridors and classrooms, and always used in teaching geography. (See enclosure B.)
   (3) At disposal of (*a*) Teachers, any work on Geography useful or necessary for preparing lectures. (*b*) Pupils: In the reading-room a case is set apart for books of travel and works of a geographical nature (about 50 volumes). (*c*) Want of good and *sufficiently cheap* physical or orographical wall maps, and especially relief maps. (*d*) Multiplicity of subjects, rendering it impossible ever to give more time to Geography than at present given.

**Examination prizes* can be obtained in four branches of subjects, viz., *Branch* A, *English subjects*, embracing reading, writing, spelling, composition, précis, English grammar, English literature, history of the English language, English by heart. *Branch* B, *commercial subjects:* Arithmetic, bookkeeping, commercial lectures, and political economy. *Branch* C, humanities, embracing the modern languages, Latin, history, *geography*, &c. *Branch* D, *Science and Art*, algebra, Euclid, trigonometry, freehand and geometrical drawing, and vocal music.

ENCLOSURE A.

SYLLABUS OF COURSE OF COMMERCIAL AND APPLIED GEOGRAPHY.—SESSION 1889-90.

FIRST YEAR.

A.—An Elementary Course of Applied Physiography, explanatory of the circumstances of every-day life, navigation, trade, and commerce, with a simple, yet more detailed, account of the following :—

1. Astronomical basis of Commercial and Applied Geography :—
    (*a*) Form of the earth—Determination of the unit of distance in space—Measurement of the exact form of the earth — Practical consequences of the form and size of the earth.
    (*b*) Motions of the earth and the resulting consequences :—
        (1) Rotation—Determination of the unit of distance in time—Correlation of the units of distance in time and space—On finding the longitude—Application of latitude and longitude to finding the time, position, and course of the navigator at sea or the traveller on land—Practical use of the sextant, theodolite, and altazimuth instruments — Principles of surveying and mapping a country or district.
        (2) Rotation and revolution—Seasons and climates.
        (3) Rotation, gravitation, &c.—Tides, trade winds, and ocean currents.
2. Physical Basis of Commercial and Applied Geography :—
    (*a*) Climates and the geographical distribution of plant and animal life.
    (*b*) Soil and the localisation of agricultural and other industries.
    (*c*) Rocks, and the minerals obtained from them, with a study of the dependent industries.
    (*d*) Rivers and mountains in their economical and commercial aspects.

B.—Physical and Economical Geography and Commercial History of—
1. Manchester, with a particular account of the industries and trade of the district.
2. Lancashire, illustrating the laying of the foundations of modern trade and commerce, or the rise and development of the textile manufacturing industries, especially cotton, and the rise and development of modern means of communication, especially the railway.
3. Great Britain, with a study of the rise and development of our commercial supremacy.
4. Ireland, as a dairy country and produce provider for Great Britain.

C.—Practical: The Study and Examination of Actual Specimens of the various Materials of Commerce—in their raw state, in the progress of manufacture and as finished goods, which enter into the trade and commerce of the different countries under review.

SECOND YEAR.

A.—1. Brief Review of the Previous Course, with special reference to the study of New Countries on the principle of comparison and contrast.

2. Physical and Economical Geography and Commercial History of Europe and the European States, with a particular account of the following selected countries :—

(*a*) Our great European industrial and commercial rivals—France and Germany.
    (1) France, as an agricultural country, contrasted from an economical point of view with Great Britain, a manufacturing and mining one.

(2) Germany, illustrating the advantages and disadvantages of such commercial combinations as the old Hanse League and the modern Zollverein, with special reference to the commercial federation of the British Empire.

(*b*) Denmark, contrasted with Ireland as a dairy country and produce provider for Great Britain, with a study of the reasons for the excellency of its products.

(*c* Portugal, and the effect of the recent political disturbances on our trade and commerce with that country, and its political offshoots.

(*d*) The Balkan Peninsula and the Eastern question from a commercial point of view—

(1) Old Turkey, New Europe, and the highway to India.

(2) Greece, or the Britain of the Mediterranean. The lessons to be learnt from a study of the rise and decline of its colonial and commercial supremacy in the past, with the application of these lessons to the case of the colonial and commerial supremacy of Britain in the present.

B.—An Elementary Course of Geographical and Economic Botany.

C.—Practical, as before, including the Botany.

THIRD YEAR.

A.—1. Brief Review, &c., as before.

2. Physical and Economical Geography and Commercial History of—

(*a*) Our Indian and Colonial Empire, with a study of

(*b*) The principal means of communication, in the light of our colonial supremacy and the commercial federation of the British Empire ; also in 1889-1890 a particular account of (i.) Canada, (ii.) South Africa, and (iii.) Australasia, as sources of raw materials, markets for finished goods, and fields for emigration.

B.—An Elementary Course of Geographical and Economic Zoology.

C.—Practical, as before, including the Zoology.

FOURTH YEAR.

A.—1. Brief Review, &c., as before, with special reference to a Short History of the Colonies and Commerce of Ancient Times.

2. Physical and Economical Geography and Commercial History of Asia, Africa, America, and Oceania, with, during the present session, a particular account of—

(*a*) Our Eastern markets—India, China, and Japan—their present state and future prospects.

(*b*) The opening-up of Persia to Western commerce and civilisation.

(*c*) Russian influence in Western and Central Asia, and its effect on British trade and commerce.

(*d*) The commercial future of Africa.

(*e*) The United States of North America as our provider, best customer, and greatest rival.

(*f*) Brazil, its coffee and cotton, with a study of the effect of the emancipation of the slaves of that country on its industry, trade, and commerce.

3. A detailed study of the Commercial and Applied Geography of the British Isles.

B.—The Geography and Trade in some Selected Product of Commerce during 1889-90—Tea and Cotton—comprising a study of the sources of the raw material ; the producing countries ; capacities of newly-settled lands ; the home market, its character, extent, and requirements ; colonial and foreign markets, their geography, number, extent, and requirements ; competition with other nations—exports, imports, statistics, and production ; daily newspaper weather reports, and their effect on produce, markets, and prices ; freight markets, &c.

C.—Practical, as before, including the Selected Products.

FIFTH YEAR.

A.—1. Brief review, &c., as before, with special reference to a History of the Colonies and Commerce of Mediæval and Modern Times.

2. A detailed study of the Commercial and Applied Geography of Europe.

B.—A Course of Geographical and Economic Geology.

C.—Practical, as before, including the Geology.

SIXTH YEAR.

A.—1. Brief review, &c., as before, with special reference to the study of Contemporaneous Commercial History.

2. A detailed study of the Commercial and Applied Geography of Asia, Africa America, and Oceania.

B.—Cosmography, with a course of Nautical Astronomy and Navigation.

C.—Practical, as before, including Microscopic Manipulation, with a view to the detection of Adulteration, various methods of examining Food-stuffs, Fabrics, Fibres, Wools, &c.

TEXTBOOKS FOR PREPARATION OF LESSONS.

(*a*) Map Drawing—Cardwell's "Introduction to the Study of Commercial Geography."

(*b*) Physical and Economical Geography—Chisholm's "School Geography and Questions."

(*c*) Commercial Geography—Casartelli's "Notes on Commercial Geography" and Chisholm's "Handbook of Commercial Geography."

(*d*) Commercial History—Yeats's Manuals of Commerce.

N.B.—In no case, however, is the student to depend on the textbooks alone for his information, but should make maps and take notes of the lectures, filling the information there obtained by reading selected passages from the works in the Museum Library, a catalogue of which is to be found in *The Manchester Geographical Society's* Vol. V., pp. 227-230.

ENCLOSURE B.—MAPS IN USE.

1. Astronomical Diagrams. Reynolds.
2. A View of Nature in all Climates. Reynolds.
2*a*. A View of Nature in Ascending Altitudes. Reynolds.
8 Geological Diagrams. Reynolds.
3*a* Geological Chart. Reynolds.
4 Manchester and District, showing Advantages of Ship Canal.
4*a* Greater Manchester. Heywood.
4*b*. Mersey Basin. "World" Series. Ruddiman Johnston.
4*c*. Mersey Basin. Blank. "World" Series. Ruddiman Johnston.
5. Lancashire. Collins.
5*a*. Lancashire. Blank. Ledsham.
6. British Isles, Orographical. Stanford.
6*a*. British Isles, Geological. Stanford.
6*b*. British Isles, Political. Hughes (Philips).
6*c*. British Isles. Blank. Betts.
7. England and Wales. Series of maps, Physical, Political, and Economical "World" Series. R. Johnston.
7*a*. England and Wales, Political. Hughes (Philips).
7*b*. England and Wales, Political. W. and A. K. Johnston.

8. Scotland. "World" Series. Physical, Political, and Economical. R. Johnston.
8*a*. Scotland. Blank. Betts.
9. Ireland. "World" Series,
9*a*. Ireland, Political. Hughes (Philips).
10. Europe, Orographical. Stanford.
10*a*. Europe. "World" Series of Physical, Political, and Economical maps.
10*b*. Europe, Political. Hughes (Philips).
10*c*. Europe, Political. W. and A. K. Johnston.
10*d*. Europe. School maps. "Sanctuary."
10*e*. Europe. Blank. Betts.
11. Belgique. Bruxelles: Dosseray, 1884.
12. World, Physical (Mercator). Keith Johnston.
12*a*. World, Commercial (Mercator). Keith Johnston.
12*b*. World, Hemispheres (large). Hughes (Philips).
12*c*. World, Hemispheres (large). Stanford.
13. British Empire.
13*a*. British Empire on Uniform Scale. "Sanctuary."
14. Dominion of Canada (very large Government map). Dep. of Railways &c., 1882.
14*a*. Dominion of Canada (School map). Ruddiman Johnston.
14*b*. Dominion of Canada. "World" Series of Physical, Political, and Economical maps.
15. Cape Colony. "World" Series of Physical, Political, and Economical maps.
16. Australia. "World" Series of Physical, Political, and Economical maps.
16*a*. Australia, Excelsior. Bacon.
16*b*. Australia, Political. Ruddiman Johnston.
17. New Zealand. "World" Series.
17*a*. New Zealand, Political. Ruddiman Johnston.
18. Fiji Islands. "World" Series.
19. India. "World" Series, comprising—
    (*a*) Map of Coastline and Rivers.
    (*b*) „ Physical Features.
    (*c*) „ Provinces and Feudatory States.
    (*d*) „ Provinces and Chief Towns.
    (*e*) „ Provinces and Chief Towns (Test).
    (*f*) „ Density of Population.
    (*g*) „ Industrial, Agricultural, and Minerals.
    (*h*) „ Railways and Carriages.
    (*i*) „ Meteorological.
    (*j*) „ Indian Ocean.
19*a*. India, Political. Ruddiman Johnston.
20. British Possessions in Europe. "World" Series.
21. British Possessions in Asia.
22. British Possessions in Africa.
23. British Possessions in America.
24. Asia. Excelsior Series. Bacon.
24*a*. Asia. "World" Series.
25. Africa. Excelsior Series. Blank. Bacon
25*a*. Africa. "World" Series.
25*b*. Africa, School. "Sanctuary," 1880.
25*c*. Africa. Keith Johnston, 1879.

26. North America, School. "Sanctuary," 1880.
27. United States. R. Johnston.
28. South America, School. "Sanctuary," 1880.
29. South America. "World" Series.
30. Chili. Valparaiso.
31. Yeats's Commercial History. Maps and charts.

ENCLOSURE C.—BOOKS AND ATLASES.

A complete list of the Works in the Museum Library was given in *The Journal of the Manchester Geographical Society*, Vol. V., pp. 227-30.

ENCLOSURE D.—COMMERCIAL AND GEOGRAPHICAL MUSEUM.

A catalogue of the Museum was given in the Journal, as above, pp. 222-227 Also a list of cards of the "Musée Scolaire" (*Ibid. p.* 230).

MR. C. H. WYATT, *Clerk to the Manchester School Board* (*see p.* 324).

Manchester School Board, Deansgate, Manchester, May 23, 1890.

Dear Sir,—In reply to your letter of the 21st inst., asking for further information relative to the teaching of geography in the schools conducted by this Board, I write to inform you that last winter the Board arranged for a course of lectures in Commercial Geography in connection with their Commercial Evening School.

I believe that these lectures were well attended and very much appreciated. I enclose a copy of the prospectus of the Commercial Evening School, which gives a syllabus of the lectures. Any further information that you may require I shall be happy to supply.

[EXTRACT.]

Commercial Geography and History: During the session a course of 20 lectures will be given by Mr. J. J. Cardwell, commencing Friday, October 11, 1889.

Commercial or Economical Geography, as contrasted with General Geography, may be defined as the department that deals with the geographical distribution of commercial products—chiefly food products, raw products, and manufactured products.

It implies a knowledge of (1) the localities where, and the conditions under which, these are produced; quantities available for export; the capacities of new countries like Africa and Australia for commercial development; (2) the various facilities and hindrances to trade, so far as these are geographical; political and social characteristics likely to affect trade; communication by land and sea, &c.

Commercial History treats of the acquisition and diffusion of wealth among nations as the result of industry and enterprise. It records the vicissitudes of trade, and compares the burdens and resources of modern States in various ways, &c.

It should, however, be borne in mind that commercial or economical geography can never be satisfactorily studied without a sound knowledge of physical geography which underlies it. Intending students will do well, therefore, to peruse one of the numerous textbooks on physiography or physical geography, which can be seen in all the public free libraries. They should also provide themselves with a flat rule, pencil, compass, and notebook, for making maps and taking notes. *(Abridged Society of Arts Syllabus.)* In illustration of the above syllabus, the following subjects and substances will be lectured upon, particular attention being given to those facts in the history of each country for which the peculiar circumstances of its geography have rendered it especially noteworthy, as indicated below:—

I.—ECONOMICAL GEOGRAPHY AND COMMERCIAL HISTORY OF COUNTRIES.

1. Lancashire, illustrating the laying of the foundations of modern trade and commerce; or, the rise and development of the textile manufacturing industries, especially cotton; and the rise and development of modern means of communication, especially the railway.

2. Great Britain, with a study of the rise and development of our commercial supremacy.

3. Our great industrial and commercial rivals—France, Germany, and the United States.

(a) France, also as an agricultural country, contrasted from an economical point of view with Great Britain, a mining and manufacturing one.

(b) Germany, also illustrating the advantages and disadvantages of such commercial combinations as the old Hanse League and the modern Zollverein with special reference to the Federation of the British Empire.

(c) United States, studied as our provider, best customer, and greatest rival.

4. Selected foreign countries as rival producers, sources of raw materials, markets for finished goods, or fields for emigration.

5. Selected British colonies or possessions as rival producers, sources of raw materials, markets for finished goods, or fields for emigration.

6. The Balkan Peninsula and the Eastern Question :—

(a) Old Turkey, New Europe, and the Highway to India.

(b) Greece, or the Britain of the Mediterranean; the lessons to be learnt from a study of the rise and decline of her colonial and commercial supremacy in the past, with an application of these lessons to the case of the colonial and commercial supremacy of Britain in the present.

II.—ECONOMICAL GEOGRAPHY AND COMMERCIAL HISTORY OF PRODUCTS.

1. The raw materials of commerce—their source, use, distribution, and commercial history generally, with the following specially :—

2. Bread plants, with the trade in grain.

3. Beverage plants, with the trade in tea, coffee, cocoa.

4. Clothing plants, with the trade in cotton and linen goods.

The lectures will be fully illustrated by maps, plans, and diagrams; and with specimens of the materials of commerce in their raw state, in the progress of manufacture, and as finished goods.

REFERENCES.

(a) Geography: Yeats's "Natural History of the Raw Materials of Commerce"; Casartelli's or Zehden's "Commercial Geographies"; Johnston's "Multum in Parvo Atlas," or Longman's "New Atlas."

(b) History: Yeats's "Growth and Vicissitudes of Commerce," "Recent and Existing Commerce," "Technical History of Commerce"; Johnston's "Statistical Atlas of Commercial Geography"; Fawcett's "Political Economy for Beginners."

Two prizes will be offered in connection with this subject.

MR. J. G. C. PARSONS, *Clerk to the Salford School Board* (*see p.* 324).

Town Hall Buildings, Salford, 23rd May, 1890.

Dear Sir,—In reply to your letter of the 21st instant, on reading over the answers that I gave you in 1885, as they appear in your printed report, I do not find it necessary to make any alteration, except that when the new Code comes into force, English will no longer be obligatory as a class subject, and it will therefore be possible to teach geography in schools where circumstances make it undesirable to take only one class subject.

Mr. E. M. HANCE, *Clerk to the Liverpool School Board* (*see p.* 325).

Municipal Offices, Liverpool, 2nd June, 1890.

Dear Sir,—In reply to your letter of the 21st ultimo, I beg to inform you that so far no modification has been made in respect of the instruction in geography given in this Board's schools.

We are proceeding upon the same lines up to the present, but it may be that in the light of the new Code some modifications will be made in the Board's general scheme of education.

Mr. THOMAS R. JOLLY, *Secretary to the Harris Institute, Preston* (*see p.* 327).

Harris Institute, Preston, June 4, 1890.

Dear Sir,—We have had a course of 20 lectures on commercial geography, conducted by Mr. John J. Cardwell, of St. Bede's College, Manchester. The class meets once a week, the time allotted being 1½ hour.

Prizes are offered to candidates who pass the examination.

The textbooks in use are : The "Geography and Natural History of Raw Materials of Commerce" (G. Philip and Co., 1887) ; Casartelli's "Commercial Geography" (Simpkin, Marshall, and Co., 1884) ; and the lectures have been fully illustrated by maps, plans, diagrams, and specimens.

The class has not been attended by many students, and has not met with the encouragement it deserves.

Mr. AUSTIN KEEN, *Secretary to the Technical School, Huddersfield.*

Dear Sir,—Since the time of your visit and advice respecting the purchase of maps we have continuously and systematically taught geography in our evening classes. We acted upon your advice as to maps completely, and we are fully satisfied with, in fact proud of, them. Geography is taught as a separate subject, in two stages, and the time allotted to it is four lessons (two in each stage), of three-quarters of an hour each. The numbers attending are about 75, and we group the subject with shorthand, bookkeeping, arithmetic, correspondence, and writing, as particularly useful to young men just entering upon commercial life.

Dec. 3, 1890.

Mr. LEONARD H. EDMINSON, M.A., *Head Master of the Old Trafford School, Manchester* (*see p.* 329).

Old Trafford School, Manchester, September 20th, 1890.

Dear Sir,—In answer to your question whether I care to add anything to my few remarks made in 1885 on the teaching of geography, I beg to say that the report issued by the Manchester Geographical Society has been of considerable service in focusing the best opinion on this subject, and in suggesting improvements in method, and in the textbooks, &c. used. I can only emphasise the difficulty expressed by so many of the great range of subjects which one is called upon to teach, and of the impossibility of finding time to do anything like justice to them.

There is the additional difficulty that one is expected to turn out boys fully equipped at the age of fifteen.

In many of these cases it seems as if one must be contented with no high standard of attainment, but simply seek to create an intellectual interest which will lead to a striving after knowledge in the hours of leisure from business. In no subject have I found this more easy, perhaps so easy, as in geography.

It would be difficult to sketch out any programme that would be more attractive to a boy's mind than the one detailed by Professor Boyd Dawkins on page 7 of the Manchester Geographical Society's Report, 1886. These "principles" of geography, if they may be so called, seem to have a wonderful interest for boys, from the youngest upwards, especially as many of them can be illustrated by occasional excursions into the country. *Apropos* of this I may say that a capital lesson in geography may be given on the top of an omnibus running the length of the Liverpool Docks.

I have encouraged stamp collecting, too, chiefly because it aids in creating an interest.

We need, greatly, more pictures (the few in Longman's New Atlas have been a help), and, above all, abundance of lantern slides. I should like particularly to urge this point.

With regard to textbooks, they all err in giving too much detail, or perhaps it is we who err in requiring too many minutiæ to be committed to memory. They prove a great burden to a boy, are often unimportant and soon forgotten, and are not essential to thorough and accurate work.

Lastly, I may add that recent events in Africa have given an impetus to the study of geography, and the same may be said of our Ship Canal.

Mr. J. HALL, M.A., *Head Master of the Hulme Grammar School* (*see p.* 333).

The Hulme Grammar School, Alexandra Park, May 8, 1890.

Dear Sir,—Geography is taught as a separate subject to every form in the school. Two hours per week are allotted to it. In the three highest forms it is taught by a master who has made a special study of it—in other forms by the form master.

Special prizes have been given for maps done in the summer holidays. The marks given for term work in the subject count in the awarding of form prizes.

Nelson's "Geographical Readers" are found useful textbooks. They are supplemented, especially in the higher forms, by selections from Stanford's "Compendium" and other works. The physical features and the commercial importance of the countries studied have special attention. There is a large and well-chosen series of the best maps procurable (see list appended) and a set of Hölzel's views. Map drawing is taught, especially drawing from memory, on simple projections, with correct latitude and longitude.

The subject seems to me to have its fair share of time attention.

LIST OF MAPS.

1. The World, Mercator's Projection. Christian Brothers Paris. No date.
2. Africa, Physical. Kiepert, Berlin. 1885.
3. Asia. Kiepert, Berlin. 1884.
4. Asia, Physical. Von Sydow, Gotha. No date.
5. South America. Kiepert, Berlin. 1886.
6. North America. Kiepert, Berlin. 1886.
7. United States. W. and A. K. Johnston, Edinburgh. No date.
8. Australia and Polynesia. Von Haardt, Vienna. 1885.
9. New Zealand. Hector and Bowden, London. No date.
10. East Indies. Bos and Rijkens, Gröningen. 1881.
11. Europe. Levasseur, Paris. 1885.

12. Europe, Physical. De Angeli, Milan. No date.
13. Central Europe. Steinhauser, Vienna. 1877.
14. Austria. Von Haardt, Vienna. 1885.
15. Germany. Kiepert, Berlin. 1883.
16. Italy, Physical. Carabelli and De Angeli, Milan. No date.
17. Alps. Randegger, Winterthur. No date.
18. Scandinavia. Roth, Sweden. No date.
19. Holy Land. Clark, London. 1886.
20. French Colonies. Levasseur, Paris. 1879.
21. British Colonies and Possessions. Stanford, London. 1885.
22. England and Wales. Hughes, Liverpool. No date.
23. Scotland. Hughes, Liverpool. No date.
24. Ireland. Hughes, Liverpool. No date.
25. Lancashire and Cheshire. Philips, London. No date.
26. Græca Antiqua. Kiepert, Berlin. 1887.
27. Italia Antiqua. Kiepert, Berlin. 1883.
28. Western Palestine. Conder and Kitchener, London. 1881.
29. St. Paul's Journeys. W. and A. K. Johnston, Edinburgh. No date.
30. Alps. (Small.) Seven. Artaria, Vienna. 1881.
31. France. Six. Vidal Lablache, Paris. No date.
32. Greater Manchester. John Heywood, Manchester. No date.
33. Geological Survey, four sheets, showing country round Manchester.
34. Dr. Yeats's Charts. Three.
35. Seven Maps illustrating Physical Geography. Artaria, Vienna. 1881.
36. Six Maps illustrating Mathematical Geography. Artaria, Vienna. 1881.
37. Five Sheets of French Communal Map, Environs of Paris.
38. Selected Views of Places, published by Philips.
39. Hölzel's Geographische Bildertafeln (a set).
40. Hölzel's Views in Egypt.

MRS. WILLOUGHBY, *Higher Ardwick Girls' School* (*see p.* 333).

Sir,—In connection with the above school the geographical lessons for the next year's examination consist of (1) a weekly lesson, in lecture form, on historical geography of England, given on Monday mornings from 11 a.m. until 12. The pupils will take notes and make sketch maps. (2) An hour devoted to map drawing on Thursday, from 11 to 12 a.m. (3) Two reading lessons from Hughes's "Physical Geography" in the course of the week. Oswald's "Historical and Geographical Text-book" is used for memory exercise. In the younger classes Blackie's "Geographical Readers" are used, with one weekly lesson in general geography, assisted by wall maps. No atlases are used by any of the pupils; diagrams from Wettstein's School Atlas, on blackboard, are used for lecture lessons. Since the last report sent to the Geographical Society model maps have been successfully attempted during two successive years in the first class—Lancashire and Africa being the subjects. Unfortunately it has not been found possible to give sufficient time for the lessons in geography to allow modelling to be continued, owing to the larger amount of time bestowed on subjects more peculiarly suitable to female education.

A prize for geography is offered in the different classes, and for geography as a special subject, which is awarded to the possessor of the highest number of marks given for map drawing and the paper on geography which forms part of the yearly examination. Geography is also one of the subjects whose marks are counted for the English prize.

MR. A. PARK, J.P., F.R.G.S., *Head Master of The Albion Schools, Ashton-under-Lyne.*

5th December, 1890.

Dear Sir,—Since I had the pleasure of submitting my replies to the questions you sent me in 1885, bearing on the subject of geographical education, I am conscious that we here have made very material advances in the way of improvement.

This improvement is evidenced both in the quality and character of the apparatus and class-books employed, and in the methods adopted by the teachers to impart instruction in the subject.

Let me briefly refer to these in the following paragraphs :—

1. Better maps are employed, and more time is devoted to cartography. Evening lectures are given to the pupils, with the aid of the magic lantern. Books of travel, tourists' accounts of places visited, and the most attractive geographical readers are placed in the hands of the elder scholars.

2. The teachers are careful to make physical geography the basis and groundwork of their courses, and to avoid *mechanical* forms as much as possible. In the senior classes attention is given to *comparative* civilisation, the industries of the human family, and the intercourse between nation and nation on commercial principles.

Let me further add that prizes are offered for proficiency in the subject, and to the evening meetings where the magic lantern is used the parents and friends are invited.

MR. H. YULE OLDHAM, *Hon. Sec. the Working Men's Clubs Association* (*see p.* 335).

Working Men's Clubs Association, Oxford Chambers, Oxford Street,
Manchester, June 18, 1890.

Dear Mr. Sowerbutts,—What we do for spreading geographical knowledge is practically the same now as in 1885.

Last winter over 100 lectures were given by our lecturers, of which, as you will see by the enclosed report, a fair number were on geographical subjects. These have proved to be well appreciated and very attractive, especially when illustrated by magic-lantern slides, for the use of which we have been frequently indebted to your kindness.

MR. W. W. CROMPTON, *Hon. Secretary Bury Athenæum* (*see p.* 336).

The Athenæum, Bury, May 26, 1890.

Dear Sir,—In reply to your letter of the 21st inst., I beg to inform you that we have no class for the teaching of geography at present.

THE REV. E. HALE, M.A., F.R.G.S., *Assistant Master at Eton* (*see p.* 338).

Jordley's Place, Eton College, May 31, 1890.

Dear Sir,—I am much honoured by the Council of the Manchester Geographical Society reprinting what I read before the British Association about geographical teaching. I am a science master here, and we still teach all our boys for one year (two lessons weekly) physiography, or, in old-fashioned terms, physical geography. I have seen no reason to alter my opinion of the great value of that science in an educational point of view—it rouses boys' powers of observation, and leads them to trace cause and effect.

I lament the divorce between history and political geography in schools. They are properly inseparable, and one cannot efficiently be studied apart from the other. But as long as teachers are absolutely ignorant of geography of any kind, but little improvement can be expected.

I trust your Council will examine the papers set in the various examinations conducted by the Civil Service Commissioners. If in the army and such like examinations the papers required a more scientific study of geography, no doubt the school teachers would rise to the demand. At present the knowledge shown by the examinee is very illusive.

The Rev. MORLEY STEVENSON, *Principal of the Training College, Warrington.*

Warrington Training College, May 23, 1890.

Dear Sir,—I reply to your questions I beg to state—

1. Geography is taught in this College as a separate subject, the extent being ruled by the Education Department Syllabus for Female Training Colleges. It may be said to comprise a general knowledge of the physical, political, and commercial geography of the world, with certain countries in greater detail, *e.g.*, the British Empire. The time per week devoted to the subject is for one class 2¾ hours, and for the other 3¾ hours. The knowledge of physical geography is for most of our students largely increased by the fact that 92 students out of 100 are taught physiography (South Kensington Syllabus). To this subject four hours per week are given.

2. Two annual prizes, value £1 each, are given to the student in each class who obtains the highest number of marks for geography during the year. Prizes are given in the same way for physiography. Five prizes are offered by the Royal Geographical Society to the five students in Female Training Colleges who gain the highest number of marks for the second year geography examination paper set in December of each year. A student from this College (Miss Isabella Innes) gained one of these prizes, Christmas, 1887.

3. Methods. The students are taught, and are prepared to teach, the subject by—
   - (*a*) Lectures, practice in map drawing, monthly examinations, model lessons to children given by the lecturer on geography, and the criticism of lessons given by the students to children in elementary schools. The students are required to illustrate as fully as possible by means of maps, sketch maps drawn during the lesson, clay models, pictures, specimens of productions, &c.
   - (*b*) Appliances. Maps either printed or drawn on the blackboard, charts, diagrams, globes, tellurion, pictures, specimens of various raw materials and manufactures, and all necessary apparatus for physical geography, *e.g.*, barometer, thermometers, rain-gauge, &c.
   - (*c*) Textbooks. Hughes's Manual of Geography, price 7s. 6d.; Geikie's Physical Geography, Hewitt's Colonies, Longman's New Atlas, 12s. 6d.; Philip's Atlas of the British Empire, and Textbooks for Physiography.
   - (*d*) Reference Books. The Training College Reference Library contains most of the best modern works on the subject. Both teachers and students have access to the library.

4. The special hindrances which we note are, no doubt, peculiar to us. They are—
   - (*a*) That geography is not scientifically and systematically taught in schools, hence the students come to us ill-prepared.
   - (*b*) That the textbooks used by children and pupil-teachers are in many cases small "cram-books."
   - (*c*) That the subject is treated as if unconnected with every day life.

5. Two of the College staff give lectures in physiography and geography.

In addition, the students had the great privilege in the Lent Term of a course of lectures on physical geography, given in the College by H. J. Mackinder, Esq., reader in geography in the University of Oxford.

MR. F. D. KING, *Head Master of the Holy Trinity Schools, Bradford, Yorkshire.*

Holy Trinity Schools, Bradford, Yorkshire, June 11, 1890.

Dear Sir,—In reply to your questions respecting the teaching of geography, I would say—

1. It is taught as a separate subject to the boys in these schools—three hours per week.

2. No prizes are awarded for proficiency in geography.

3. As to methods and appliances, we have wall maps of the school, of Bradford and district, of Yorkshire, of England, of the British Isles, of Europe, and of the World in hemispheres. In addition to this we have a set of Varty's coloured prints to illustrate geographical terms. A geographical reader is used in each class, but rather as a reading book than as a geographical textbook for the children. The teaching is almost entirely oral, the blackboard being used. Maps are drawn by the children in all standards. No textbooks are supplied either to teachers or children.

4. The special hindrances to the thorough and scientific teaching of the subject are—

(1) The want of good relief or contour maps.
(2) The want of more interesting textbooks.
(3) The want of good libraries of geographical works of all kinds, and accessible to teachers at a very cheap rate.
(4) The want of good lectures, with lantern-slide illustrations, to describe in a graphic manner the physical features, the climate, the productions, and the races which inhabit a country.

The average map tells us next to nothing of the contour of a country, and the average textbook is as dry as an auctioneer's catalogue. Descriptive geography is a lost art, and the need for a philosophic explanation of the facts with which most textbooks are crammed seldom appears to have occurred to the writers of them.

MR. J. SCOTT KELTIE, F.R.G.S., *Librarian to the Royal Geographical Society, and Editor of "The Statesman's Year Book," &c., &c.*

1, Savile Row, Burlington Gardens, W., 4th December, 1890.

Dear Mr. Sowerbutts,—I do not think I can add anything to your interesting upplementary report on geographical education. It is satisfactory to see that in your district the subject, especially in its practical aspects, is making progress. It is specially gratifying to notice the comprehensive lines on which it is being worked out in Owens College.

I believe I am right in saying that the Council of the Royal Geographical Society are well satisfied with the results of their efforts so far. There are now classes of geography at Oxford and Cambridge; and there is reason to believe that the annual award of prizes by the Society to training college students is doing good. Judging from the examination papers, geography is taught in the training colleges on very satisfactory lines.

Except in the most advanced stages, I am of opinion that the practical application of geography—to commerce, to colonisation, to history—can best be indicated in connection with the teaching of the general subject; especially so in elementary schools. On this and other matters you will find what I have to say in the little book on "Applied Geography," a copy of which I send you.

MR. H. J. MACKINDER, M.A., *Reader in Geography to the University of Oxford.*

1, Bradmore Road, Oxford, 27th December, 1890.

Dear Mr. Sowerbutts,— In reply to your letter of December 3rd I have to say that I have looked through the report of your education committee with very great interest. It seems to me that you are making real progress in Lancashire. I am especially struck with Mr. Cardwell's syllabus of the teaching at St. Bede's College. As Dr. Casartelli says, it is a noteworthy piece of work. Mr. Cardwell is indeed a fortunate man in being able to go through a consistent course of six years' duration. I am persuaded that the greatest of all the defects in the teaching of geography in most of our schools is its disconnected character. Geography is entrusted to the form master, and the boys are moved up as a result of their work in other subjects. The consequence is that I have known of cases where a boy's career through a school has chanced to give him teaching on the geography of South America in three several years, while he has not even once had a lesson on Asia. Hence a "scrappy" instead of a broad and consistent knowledge. The method of contrasts which abounds in Mr. Cardwell's syllabus is impracticable with the ordinary lack of system, which makes it impossible for the teacher to postulate the same, or indeed any previous knowledge on the part of his pupils.

[NOTE.—The work of Mr. J. H. Silberbach, in the preparation of boxes illustrating the natural products, and the boxes illustrating the technical uses of the products, with the geographical text-books, marks a great advance in the method of teaching, and gives the teacher a great fund of matter with which he may interest and teach his pupils. The new books of Dr. Yeats, "The Golden Gates of Trade" and "Map Studies," Dr. Mills's "Commercial Geography and Atlas," Mr. J. S. Keltie's "Appliances in Geography," and a number of other works of a similar character, give to the intelligent teacher new text-books of great value.]

PRIZES AND CERTIFICATES FOR 1891 EXAMINATION.

The Council has the pleasure to offer for 1891 the following prizes for proficiency in a geographical examination, and one of the members has very kindly offered a prize for the best essay on one of the most interesting parts of Commercial Geography.

It rests with the members of the Society to make these examinations a success, and to enable the Council to enlarge the field of operations in another year.

The subject for examination for prizes and certificates of the Manchester Geographical Society for next year will be "The Geography of Lancashire and Cheshire."

The following syllabus will be of use as a guide to the children who are intending to present themselves for examination.

The examination will take place in the month of May, 1891, at places to be subsequently appointed by the Council. The children in any school up to the 7th Standard inclusive in Lancashire, Yorkshire, and Cheshire may compete.

The examination will be in writing.

The questions to be answered will be given out to the children by the examiners, who will be present the whole time of the examination.

No notes, text-books, or other aids may be used at the examination.

The papers will be adjudicated upon by two members of the Council of the Society.

Five prizes of £1 each, and ten prizes of 10s. each, will be given with the certificates of the Society.

Any further information may be obtained on application to the Secretary, 44 Brown Street, Manchester.

SYLLABUS.

I.—THE LAND, WATER, AND AIR OF THE TWO COUNTIES.

(*a*) Their position, surface, size, shape, boundaries.

(*b*) Their highlands, middle-lands, and lowlands ; their hills and valleys ; their islands.

(*c*) Their seas and lakes, and the rivers running into and out of them ; the courses and basins of the rivers ; their mouths and estuaries.

(*d*) Our climate ; our east, west, south, south-west winds ; our rainfall, mists, and fogs.

II.—THE NATURAL RICHES OF THE TWO COUNTIES.

(*a*) Mineral wealth ; some notions of the geology of the counties ; their mines, quarries, springs, coal, iron, salt.

(*b*) Agricultural wealth ; food products ; farming ; medicinal products ; industrial products.

(*c*) Animal wealth ; our animals ; animal substances ; our birds ; our insects ; bee-farming.

III.—THE PEOPLE OF THE TWO COUNTIES.

(*a*) The races of the people ; their origin ; their dialects.

(*b*) The homes of the people ; towns, villages.

(*c*) Their political divisions ; counties, hundreds, parliamentary divisions.

(*d*) Their government ; What is a "county palatine ?" county councils, corporations, poor law, police, and other authorities.

IV.—THE TRADE OF THE TWO COUNTIES.

(*a*) Industries, or the producing of commodities.

(*b*) Commerce, or the exchange of commodities.

A competent knowledge of Section I., and of at least two of the other sections, will be required from all candidates for a prize.

THE GREGORY PRIZE OF FIVE POUNDS.

Mr. Theodore Gregory, F.C.A., offers a Prize of £5 for the best paper written by any member of the Society "On the Commercial Products of Central Africa (the country lying between the Sahara and the Zambesi), and the Best Method of Developing a Trade in them with Europe."

The essays must be sent to the Secretary not later than May 31st, 1891, and each essay must be marked by a *nom de plume.* An envelope must accompany the essay containing the name of the writer within. The envelope must be closed, having the *nom de plume* outside.

The examiners for the Society's prizes for 1891 will award the prize to the writer of the essay which they decide is the best, which will, at the discretion of the editor, be printed in whole or in part in the Society's Journal.

The Committee have pleasure in saying that a perusal of the above replies, compared with those given by the same educational institutions in 1885, will give a very good idea of the amount and kind of progress in geographical teaching made during the space of five years. The net result indicated is, at least, a decided stirring up of general interest in the subject, and some no less decided steps in advance in the direction of the organising of sound geographical training. The influence of our Geographical Exhibition in the one matter of cartography is also indicated, particularly in the list of maps given by the Head Master of the Hulme Grammar School.

Two other events ought to be recorded here as supplementing the information contained in the foregoing returns.

The first is the appointment of a Lecturer on Commercial Geography for the evening classes at the Owens College, in the person of Mr. H. Spencer Wilkinson, M.A., who enjoys a well-merited reputation as an expert and critic on the important subject of Military Cartography. The course of lectures begins with the year 1891.

The second event is the action of the Manchester Chamber of Commerce in introducing General and Commercial Geography into its scheme for Certificates in Commercial Knowledge. The following extracts from the syllabus will indicate the ground covered by the requirements of the Chamber :—

I.

CERTIFICATE FOR JUNIORS.—Intended, in the first place, for boys of 13 to 15, who are leaving school (but not restricted to these), and also to be open to those who will afterwards proceed to the second certificate.

Among the obligatory subjects are :—

Geography : (1) General Notions of Physical Geography, including the origin of mountains and rivers, the causes of day and night, the seasons, &c.

(2) Physical and Political Geography of Europe, with special knowledge of products and industries.

(3) Projecting and Sketching of Maps from Memory.

II.

CERTIFICATE FOR SENIORS.—Intended for boys about 16, but open to all ages.

In Part I. among the obligatory subjects are :—

Geography · (1) General Notions of Physical Geography and Physiography.

(2) Physical and Political Geography of Europe, including a knowledge of the industries and products of various countries.

(3) Projecting and Sketching Maps from Memory.

(4) Special Knowledge of the Geography of India ; and of one British colony, and one foreign country, to be named by the Board from year to year.

[Appointed for 1891 : British colony, Newfoundland ; foreign country, Greece.]

In Part II. ("Technical") which may be taken at the same time as Part I., or, at the candidate's option, six months later :—

Commercial Geography : Some one branch of trade to be appointed each year.

[Appointed for 1891 : History and Statistics of the Trade in Raw Cotton.]

APPENDIX.

NEW APPLIANCES AND BOOKS ON COMMERCIAL GEOGRAPHY.

The geographical boxes containing specimens of the natural products of each country of the earth, with text-books arranged by Mr. J. H. Silberbach, for the use of the Diocesan Schools of the Wirral peninsula, are most effective in the hands of capable teachers.

We are glad to have heard of a number of schools, besides those mentioned in the report, which are accumulating geographical museums, many of them of a humble sort, yet indicating that the movement inaugurated by this Society, for the more graphic and less bookish method of teaching, is making progress.

We are also glad to learn that many schools are becoming possessed of lanterns, which are used to illustrate geographical teaching.

The Society's lantern has, we are pleased to note, been used during the winter once or twice every week, with graphic and interesting lectures by the Victorians.

The following list of new books in English, on Commercial Geography, will be useful to teachers and school managers :—

Chisholm's Commercial Geography. Longmans. 16s.

Notes on Commercial Geography. By Rev. L. C. Casartelli, M.A. J. B. Ledsham. 1s. 6d.

Cardwell's Introduction to Commercial Geography, Map Drawing, and Projection from Memory. By Mr. J. J. Cardwell. John Heywood.

Elementary Commercial Geography. By Mr. H. R. Mill, D.Sc., &c. (Pitt Press Series.) C. J. Clay & Son. 1s. 6d.

Atlas of Commercial Geography. By J. G. Bartholomew. (Pitt Press Series.) 27 Maps and Introduction. C. J. Clay & Son. 3s.

Commercial Geography. By Dr. Carl Zehden. Translated by F. Muirhead, M.A. Map. Blackie & Son. 7s. 6d.

Applied Geography. By Mr. J. Scott Keltie. Maps. G. Philip & Son.

Commercial Geography. By Mr. Kenric Murray, of London Chamber of Commerce.

Year Book of Commerce. By Mr. K. Murray. 1890-91. Cassell & Co.

Statistical Year Book. 1891. Edited by Mr. J. Scott Keltie. Cassell & Co.

Whitaker's Almanack. 1891. 2s. 6d.

Growth and Vicissitude of Commerce; Recent and Existing Commerce; Technical History of Commerce; and Natural History of Commerce. These four standard books, by Dr. J. Yeats, LL.D., are published at 6s. each; but the set is supplied by the publishers at a reduction, and have maps and diagrams. G. Philip & Son.

The Golden Gates of Trade. Map Studies of the Mercantile World. By Dr. Yeats. G. Philip & Son. 2s. 6d. each.

Natural Products of Africa. (Text-book to geographical box of Africa.) By J. H. Silberbach. 4d.

The Earth and Man: A Study in Advanced Geography. (Lecture by Dr. R. Mill.) Notes of which are not yet published.

PROCEEDINGS OF THE SOCIETY

FROM JULY 1ST TO SEPTEMBER 30TH, 1890.

HUNDRED AND THIRTY-FOURTH MEETING

Of the Society, held in the Imperial Hotel, Huddersfield, on Saturday, July 19, 1890, at 7-30 p.m., Mr. J. OWEN STOCK in the chair.

The members had gone by rail to Stocksmoor, and walked by Grange, the Storrs Woods, Farnley Tyas, and Castle Hill to Huddersfield. The walk was very enjoyable, the woods were delightful, and the extensive views in the clear atmosphere very striking. The geology and botany, &c., of the district were referred to during the walk, and the old town of Almondbury, with the Roman and Saxon camp on Castle Hill, brought out the archæological feature of the excursion.

After a good tea some of the members returned to the Technical School to make a further examination of the building and apparatus of the school.

Votes of thanks were heartily given to Mr. Smith, the leader of the party, Mr. Stock, and Mr. A. Keene, of the Technical School.

HUNDRED AND THIRTY-FIFTH MEETING

Of the Society, held in the Library, Tuesday, July 22, 1890, at 7-30 p.m. Mr. C. H. STOTT in the chair.

The minutes of meetings from the 115th to 134th having been read and approved, the election of the following members was announced :—

ORDINARY : Mrs. E. Morgan, Miss H. Staveacre, and Messrs. R. J. Bedell, H. H. Bolton, L. Brettauer, James Burgess, J. F. Cheetham, J.P., W. S. Churchill, J. Clarke, Thomas Costley, Dr. Cox, W. H. Eastwood, John Farish, Fred Gleun, J.P., B. Glossop, E. F. Goulburn, John Hardman, George Hargreaves, J. P. Hartley, Richard Healey, Thomas Ivison, Jones, Benjamin Kenyou, John Killock, Matthew Killock. T. H. Lees, W. Leigh, John McRobert, Alex. Neil, W. H. Rowbotham, A. C. Russell, Alfred T. M. W. Thompstone, D. W. Vaughan, M.A., J. J. Warbrick, Daniel Williams, W. H. Withington, R. B. Wood, and Councillor W. Wood.

ASSOCIATE : Messrs. Thomas Bleakley, E. Harrison, Henry Huppold, E. Leeman, and P. Spencer.

CORRESPONDING : Mr. Alvan Millson, of Lagos.

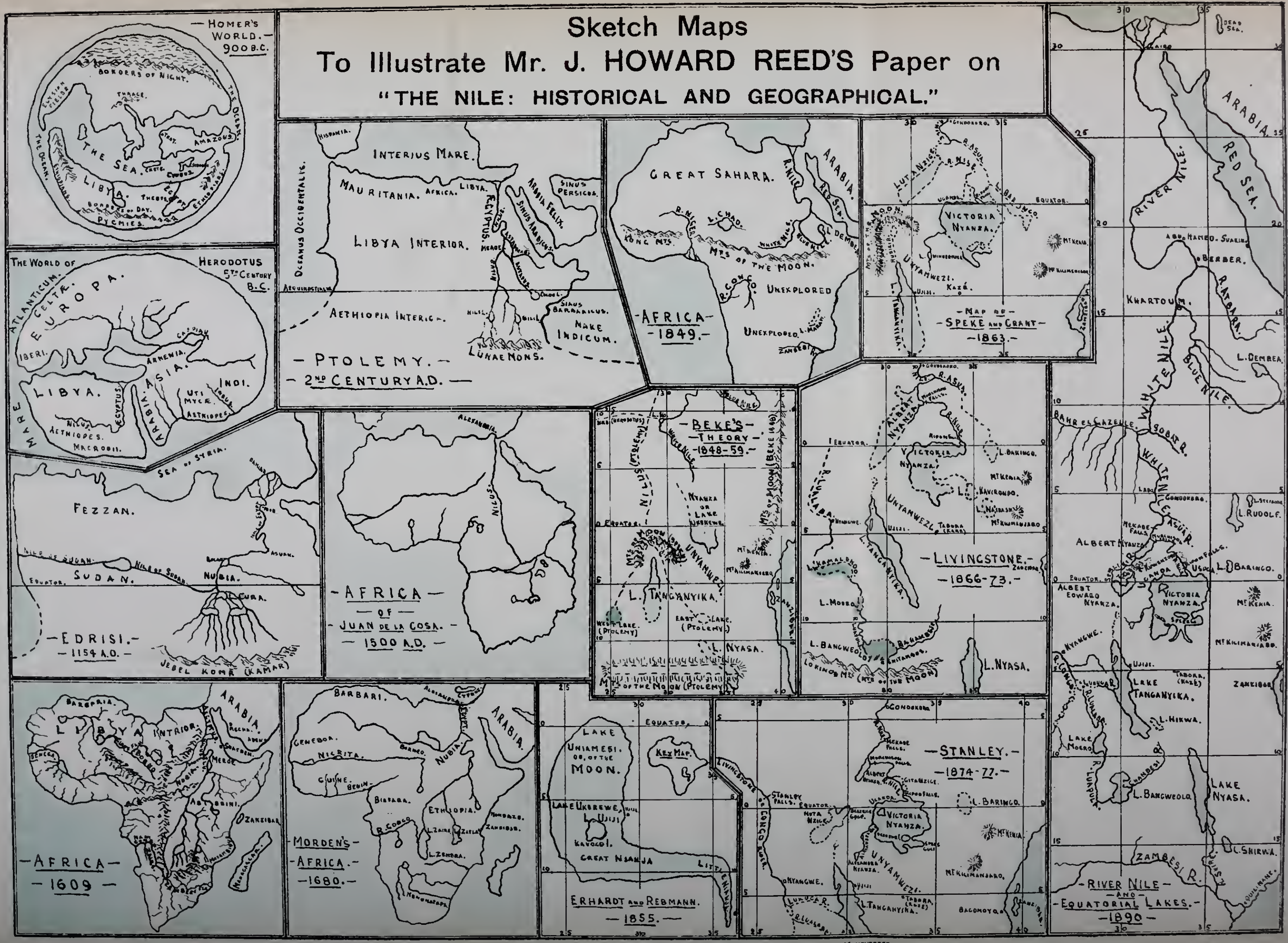
A large number of presentations were announced, and letters were read from H.E. Sir A. Moloney, K.C.M.G., Lagos, C. Tondini de Quarenghi, R. E. Dennett, of the Congo, and others.

The following papers were then read : "The Historical Development of the Geographical Delineation of the Great African Lakes," by J. Howard Reed (see p. 208) ; "The Island of Kadavu," by J. P. Thomson, F.R.S.G.S. (see p. 194) ; "The Rhins of Galloway," by W. G. Black, F.R.C.S.E., &c., &c. (see p. 206) ; "The Great Pyramid."

The Anglo-German Agreement was discussed, and maps referred to. The arrangements for the excursion to Sweden were announced.

The meeting closed with votes of thanks to the writers and readers of the papers, and to the chairman.

Sketch Maps
To Illustrate Mr. J. HOWARD REED'S Paper on
"THE NILE: HISTORICAL AND GEOGRAPHICAL."



BENJ. O'CONNOR, 4, FOUNTAIN STREET MANCHESTER.

THE JOURNAL

OF THE

MANCHESTER GEOGRAPHICAL SOCIETY.

THE NILE: HISTORICAL AND GEOGRAPHICAL.

(*See Maps.*)*

By Mr. J. HOWARD REED.

[Addressed to the Members in the Library, Wednesday, Oct. 8th, 1890. Mr. W. ALDRED, F.C.A., in the chair.]

I INVITE you this evening to accompany me on an imaginary visit to a distant land. I propose to journey to the land of the Pharaohs, push ahead through Nubia into Ethiopia, and visit the great equatorial lakes of Central Africa.

Our object will be to learn all we can of the "holy river" Nile, to follow its windings, and visit its most remote fountains or sources.

The story the Nile has to tell us is, I venture to say, one of a most interesting character. I feel sure the pleasure of our imaginary journey to-night will be marred only by the indifferent capacity of the guide. Our business will be to study the history, and more especially the geography, of the Nile.

The holy river—"the Jove-descended Nile"—formerly bore the name of *Ægyptus*. Professor Rawlinson, in his "History of the Ancient Egyptians," says: "the term Egypt was not known to the Ancient Egyptians themselves, but appears to have been first used by the Greeks as a name for the Nile, and thence extended to the country. It is stated by some authorities that the river received its present title from Nilus, an ancient king of Thebes, who named the stream after himself.

"Father Nile" was an object of great veneration to the ancients, and a gift of its waters was considered by them as a present fit for kings and queens. The veneration in which the river was held, of course, arose from the blessings its annual overflow spread broadcast over its banks, by fertilising the seed of the sower, producing abundant crops for the sickle of the reaper, and thus making glad the heart of man. It is stated that the Arabs in the present day consider it a delicious privilege to slake their thirst with the salubrious and agreeable waters of the river, and I have read that they will even artificially excite thirst to indulge in the pleasure of imbibing refreshing and satisfying draughts from the "holy stream." The general Pescennius Niger is said to have cried to his soldiers: "What! Crave you for wine, when you have the water of the Nile to drink?" Homer is stated to have said, no doubt referring poetically to its regular and fertilising overflow: "The Nile flows down from heaven." The Egyptians say that "if Mahomet had tasted the waters of the Nile, he would have prayed God to make him immortal, that he might have enjoyed them for ever."

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* The maps accompanying this paper are reduced from the diagrams exhibited by Mr. Reed at the meeting.

The river has a total length of considerably over 3,000 miles, and is remarkable, among the rivers of the world, from the fact that for about the last 1,500 miles of its flow it receives no tributary—none, in fact, after the Atbara or Tacazze. The consequence is that, by the time it reaches the sea, its volume is considerably reduced by evaporation, and from the large quantity of water used along its banks for irrigation and other purposes. The river is formed of two principal branches, the Bahr-el-Azrek or Blue Nile, and the Bahr-el-Abiad or White Nile, the latter of which is the main branch or true Nile. It receives also, as tributary rivers, the Atbara or Tacazze before mentioned, with the Sobat and Asua on the east side; and the Bahr-el-Gazelle on the west; besides other smaller and less-important streams. Its waters are discharged into the Mediterranean through several mouths, the two principal of which are known as the Rosetta and Damietta mouths—the first-named being to the west and the other to the east. The principal island, formed by the divisions of the river, being shaped like the fourth letter of the Greek alphabet, takes the name of Delta; and the Nile is doubtless the river which first suggested, what is now a technical name for all similar formations at the mouths of rivers.

The rise and overflow of the Nile, caused by the seasonal rains of the interior, has been for ages noted for its regularity. The rise commences about midsummer, reaches its greatest height at the autumnal equinox, and has again subsided by Christmas; leaving the land highly enriched by the fertilising sediment of red earth brought down by the Abyssinian tributaries, and deposited by the river. The land can then be worked, and the crops planted.

The rise and fall of the river is watched with great anxiety by the inhabitants of the Nile valley. At intervals along its banks river gauges, or nilometers, are fixed, upon which the variations of the river are duly recorded. I believe some nilometers are still in existence and use, which have done service for untold generations.

It was no doubt the rise, overflow, and fall of the river that first attracted the attention of thoughtful men in ancient days, and excited the curiosity which led them to inquire into its cause.

Nearly five centuries before the Christian era, the first great African traveller, Herodotus, writing about the Nile, said: "Respecting the nature of this river, I was unable to gain any information, either from the priests or anyone else. I was very desirous, however, of learning from them why the Nile, beginning at the summer solstice, fills and overflows for a hundred days; and when it has nearly completed this number of days, falls short in its stream and retires; so that it continues low all the winter, until the return of the summer solstice . . . by saying that the Nile flows from melted snow, it says nothing, for this river flows from Libya through the middle of Ethiopia, and discharges itself into Egypt ; how, therefore, since it runs from a very hot to a colder region, can it flow from snow ?" And again he says : "Touching the source of the Nile, no man of all the Egyptians, Lybians, or Grecians I have conversed with ever pretended to know anything certain, except a scribe, who had the charge of Minerva's treasury at Sais, a city of Egypt. And though I thought he trifled with me, when he said he was perfectly informed of this secret, I shall yet give a place here to his relation : 'Crophi,' said he, 'and Mophi, are two mountains with heads of pyramidical form, . . . and between these hills is a profound abyss, which contains the springs of the Nile. One half of the water issuing from this place runs into Egypt northward ; the other half passes southward to Ethiopia !'"

We have before us a map of the world, as known in the time of Herodotus, which shows the river flowing from the west as he supposed it to do. You will note that in the map of the world of the Homeric epoch, 900 B.C., the Nile is shown flowing from the east.

Alexander the Great and Ptolemy Philadelphus are stated to have earnestly contemplated the solution of the Nile problem ; and the Latin poet, Lucan, in representing Julius Cæsar as speaking at the feast of Cleopatra, ascribes to him the same desire :—

> "Yet still no views have urged my ardour more
> Than Nile's remotest mountains to explore.
> Then say what source the famous stream supplies,
> And bids it at revolving periods rise ;
> Show me the head from which, since time begun,
> The long succession of his waves have run ;
> This let me know, and all my toils shall cease,
> The sword be sheathed, and earth be blessed with peace."

Seneca writes that the Emperor Nero sent an exploring expedition, under two centurions, with military force, to explore the countries along the banks of the Astapus or White River, and to search for the Nile's sources. They passed down the river a considerable distance until immense marshes were met with. They forced their way through, and continued their journey southward, until the river was seen "tumbling down or issuing out between the rocks." They were then obliged to turn back and declare their mission a failure. The centurions are stated to have brought back with them a map of the districts they had passed through, for the information of the Imperial Nero.

This early expedition succeeded in penetrating about 800 Roman miles south of Meroe—that is to say, reaching 3° or 4° north latitude. The place where the water was seen "tumbling down from between the rocks" was probably the Fola or Mekade cataract, again discovered in our own day by the late General Gordon. The river here rushes through a narrow ravine, over and between rocks of from 30 to 40 feet high. These falls are stated to be the only insurmountable obstacle to the navigation of the Nile, for vessels of considerable size, from the Mediterranean to the Albert Lake.

About seventy years later, during the second century, we find Claudius Ptolemy, a celebrated geographer and astrologer of Alexandria, writing about the Nile and its sources. He tells us that the "holy stream" rises some twelve degrees south of the equator, in a number of streams that flow into two lakes, situated east and west of each other; from which, in turn, issue two rivers; these afterwards unite and form the Nile. From latitudes and longtitudes given by the ancient writer, various geographers have at different times produced maps showing the supposed position of Ptolemy's lakes. His positions are not very reliable, being based upon the imperfect knowledge of his day; but they can, to some extent, be interpreted when altered to suit the known positions of other geographical points, which he also incorrectly fixed by the rude means and crude information at his command. I have copied the main features of one of these maps.

Ptolemy also mentioned that in the interior of Africa were some mountains which he called "Selenes Oros"—generally translated "Mountains of the Moon." This statement of Ptolemy's would almost seem to be a development, or advance, upon what Herodotus refers to—viz., that the Nile was stated to be fed by melting snow—which suggests the probable existence of snow caps to Ptolemy's "Moon Mountains."

Following in the steps of Ptolemy come the Arab geographers, and they are stated to have practically adopted all his theories and geographical notions. Among the Arab writers we find that Edrisi, in the year 1154, writing of the Nile, says: "These two parts of the Nile spring from the Mountains of the Moon, which are situated 16° beyond the equator. From these mountains the Nile issues in ten streams, five of which flow together into one great lake, and the remainder into another such lake. From each of these lakes flow three rivers, the whole of which, by their conflux, form a very large lake. . . . The Nile (of Egypt) . . . flows to the northward, watering in its course the countries of Nubia and Egypt." Edrisi's map, it will be noticed, is much the same as that of Ptolemy, although of about a thousand years' later date.

Abulfeda, who lived between the years 1273 and 1331, writing of the Nile, says: "It springs from those deserts which extend southward beyond the equator; wherefore it is difficult for us to investigate its sources. . . . The Greeks . . . relate that Ptolemy informs them that they flow from the mountains Al Komri (the Mountains of the Moon) in ten distinct streams. . . . These ten streams run into two lakes; five into each. . . . From each of these lakes spring four rivers, or eight in all: . . . six run northward, and form a round lake at the equator. . . . The Nile emerging from this lake . . . passes on to Misrain (Cairo)."

Scheadeddin says: "From the Mountains of the Moon the Egyptian Nile takes its rise. . . . Many rivers come from this mountain, and unite in a great lake. From this lake comes the Nile, the greatest and most beautiful of the rivers of all the earth."

Later on we find that the Portuguese travellers obtained a considerable amount of information regarding the geography of the interior of Africa. They appear to have had some knowledge of the existence of several large lakes in the centre of the continent, and in some of their early maps these lakes find a place. I have been able to produce roughly, from a very small sketch which I possess, a copy of a map of

Africa which belonged to Juan de la Cosa, the pilot of Columbus. The Mountains of the Moon do not appear in this map, but you will note that the Nile is shown flowing from lakes in the interior.

Many of the old maps of Africa, dating from the 16th and 17th centuries—two others of which I have copied—show the Nile flowing from lakes in various positions, and most of them are embellished with sketches of "Lunæ Montes"—Moon Mountains—running in ranges across the continent in every conceivable direction, north, south, east, and west. The sketches on many of the maps remind one of Swift's verse, written in 1733 :—

> "So geographers in Afric maps,
> With savage pictures fill their gaps,
> And o'er unhabitable downs
> Place elephants for want of towns."

The reverend poet had no doubt seen some of the maps—still to be seen—which have sketches of elephants, ostriches, &c., sprawled over the districts, which in more modern, but perhaps less artistic, days we should leave blank.

Pigafetta, a Portuguese traveller and voyager, who lived in the 16th century, writing in 1591, mentioned the existence of lakes in the centre of Africa. He stated that there were two lakes, not lying east and west as supposed by Ptolemy, but north and south, about 400 miles apart, which gave birth to the Nile. These lakes are supposed to refer to the Nyasa and Tanganyika, by Captain Burton, who states that from then, till the time when they were visited by Livingstone and himself, "they were blended into one lake, or separated into two to suit the varying theories of the geographer." The Nyasa was known by repute under the name of Maravi, and was so marked on the maps of Africa used by our fathers.

Another feature of the maps of the first half of this century is the range of mountains running across the continent from east to west, and known by the old title of "Mountains of the Moon." The Kong Mountains were known from the reports of travellers in the west, and were fancifully extended across the continent in the neighbourhood of the equator by the map makers ; possibly on account of Ptolemy's original statement, but more probably because they already existed in the earlier maps of the Portuguese and others.

It is interesting to note, as it has a direct bearing on the probable reason for the placing of the "Mountains of the Moon," that the now well-known country of Unyamwezi, has been more or less known for several centuries. Burton says it was first heard of by the Portuguese about 1589, and was supposed to cover a very large area in Central Africa. Its name, Unyamwezi, has been translated at different times as "Country of the Moon," and this, no doubt, had something to do with Ptolemy's mountains of the same name being fixed on the maps in its locality. However this may be, the fact remains that the Mountains of the Moon and the lakes of Africa have shifted about, disappeared and reappeared, in every conceivable manner, for centuries; till, so late as the middle of the present century, we find them fixed as in the map now before us, which I have copied from an atlas bearing date 1849.

I must now ask you to let me take you back a short time, while we trace the development of knowledge further to the north. It appears to have been known to the ancients that the Nile proper is formed of two principal branches, which join and form one river close to where the town of Khartoum (or its ruin) now stands; but beyond this, as we have seen, little authentic information has been handed down.

In the year 1770, Bruce gave his attention to the Blue Nile. He was enabled to locate the sources of that branch of the river among the mountains and highlands of Abyssinia, near Lake Dembea. In 1788 the African Association was founded, and in furtherance of its objects much information was obtained of the geography of the "Dark Continent." In 1827, M. Linant, a French traveller, passed up the White Nile to a considerable distance above its junction with the Blue Nile branch. About the year 1840 two Egyptian naval officers headed an expedition, fitted out by Mahommed Ali, the then ruler of Egypt; they forced their way through the terrible marshes to within 3° 40″ of the equator; but were, like the expedition of the Emperor Nero, at last obliged to turn back.

In 1831 the old African Association was merged into the Royal Geographical Society, and from then, right down to the present time, our knowledge of the Nile and its sources has been perfecting itself. Many times during this period have theories been promulgated, based upon imperfect, incorrect, or insufficient information, which, in time, have been abandoned when viewed in the light of new facts, obtained only by numerous and gallant efforts put forth by many heroic and energetic men. Some of these brave hearts have done much, and earned for themselves an everlasting name on the scroll of Nile heroes; some have attempted noble things, but have been cut down by death before they had fairly crossed the threshold; while others have given their time, their money, their health, aye! and ultimately their life, in the search for the sources of the "holy stream," without being permitted to see—even afar off—the fountains they were searching for! With your indulgence we will try to follow the steps of these later travellers a little closer, and endeavour to develop an increasing knowledge of what has been done by them.

In the year 1844, at Mombasa, on the east coast of Africa, a mission station was established under the auspices of the Church Missionary Society. The work at this station was carried on by three gentlemen—Messrs. Krapf, Rebmann, and Erhardt. These reverend pioneers did much to direct the eyes of the geographical world to that part of the globe. They heard, from the trading Arabs and natives, of a large lake, or series of lakes, existing in the interior of the continent, and they discovered the snow-capped mountains Kilimanjaro and Kenia. In 1855 Rebmann and Erhardt sent home to England a rough sketch-map, drawn from the information obtained, indicating the position of the huge lake, or series of large lakes, of which they had heard. The enormous extent of country which this lake, as sketched, was supposed to cover, together with the shape given to it by the missonaries, drew the special attention of the geographical world to the matter. The newly-reported lake, not only occupied a large area at its upper or northern end, but stretched to such a distance to the south, in a long trailing area, that it covered the assumed position of the reputed Sea of Ujiji or Tanganyika Lake, as well as the Maravi or Nyasa Lake, which, as we have before seen, had been reported to exist from the days of Pigafetta.

Speculation immediately became rife, and it was shrewdly suspected by geographers that the lake or lakes formed the "fountains of the Nile." The map and reports of the Mombasa missionaries created such a flutter in geographical circles in England that the Royal Geographical Society gave the subject their attention, and the public press discussed the matter from all points of view.

The result of the Royal Geographical Society's deliberations on the subject was, that they determined to make a practical effort to get further information, and, if possible, to clear up the whole mystery. They arranged that an expedition should be sent into the interior of Central Africa, "for the purpose of ascertaining the limits of the sea of Ujiji, or Unyamwezi Lake."

Captain R. F. Burton (afterwards Sir Richard Burton), a traveller who had already won his spurs in successfully penetrating the interior of difficult and dangerous countries, was invited to lead the expedition. He was accompanied by Lieutenant Speke. These two gentlemen, who both belonged to the Indian army, had been before associated in an expedition which attempted to penetrate the "Dark Continent" from the Somali coast, but which met with disaster, one of its white members losing his life, the others being each wounded, and from which Speke only narrowly escaped with his life, he being covered with no less than eleven spear wounds.

Burton and Speke's expedition started from Zanzibar about the beginning of the year 1857. We shall not be able to follow the details of their journey, but merely refer to its geographical results. They travelled westward, suffering various difficulties and illnesses; but, nevertheless, "strong in will, to strive, to seek, to find, and not to yield."

On the 13th of February, 1858, they were rewarded by their first view of Lake Tanganyika. They were undoubtedly the first Englishmen to sight its waters, and probably the first white men who had gazed upon its blue expanse. They might well have exclaimed with the ancient mariner:—

"We were the first that ever burst
Into that silent sea."

After some little difficulty and delay, due in great measure to the serious illness of both the travellers, they were enabled to make a voyage of exploration on the lake in canoes hired from some of the Ujiji Arabs. They had been told by these Arabs of the existence, at the north end of the lake, of an outflowing river, and bearing the name Rusizi. They made a gallant effort to reach this supposed outlet, but failed to get further north than Uvira on the west shore. Here their men quite refused to go further, and Burton being paralytic, and Speke nearly blind at the time, they found themselves compelled to give up the quest. The sons of a native chief visited their camp at Uvira, and they were asked about the mysterious river supposed to issue from the north end of the lake. Burton says: "They all declared that they had visited it, . . . but they unanimously asserted, and every man in the host of bystanders confirmed their words, that the Rusizi enters into, and does not flow out of, the Tanganyika." He says further: "I felt sick at heart. I had not, it is true, undertaken to explore the 'Coy Fountains' by this route; but the combined assertions of the cogging Shaykh and the false Msawahili had startled me from the proprieties of reason, and—this was the result."

Referring to the people's refusal to go further, Burton says: "It is a characteristic of African travel that the explorer may be arrested at the very bourne of his journey, on the very threshold of success, by a single stage, as effectually as if all the waves of the Atlantic or the sands of Arabia lay between."

In May, 1858, Burton and Speke turned their backs upon Tanganyika and June found them back again at Kazé in Unyanyembe. It was here that the travellers, on their journey inland, first got any definite information about the lake regions. An Arab, who became their host in that settlement, Sheikh Snay by name, informed them that the Ukerewe Lake, the Sea of Ujiji, and Lake Nyasa, were three separate lakes, and not one gigantic sheet of water as shown upon the map of the Mombasa missionaries.

On reaching Kazé, on their return journey, Speke resolved to make a flying visit northward in the hope of getting some information, or perhaps even a view, of the reputed Ukerewe Lake. This journey was undertaken with the full consent of Burton, who was himself obliged to stay behind, being in very poor health, and engaged besides in collecting information, from the natives and Arabs, of the peoples and countries they had not been able to visit. On the 9th of July, 1858, Speke started with a small caravan for the north and the Ukerewe Lake, the waters of which first broke into his view on the 30th of the same month. At that moment Speke believed he had discovered the head waters of the Nile. He had already heard from the Arabs that the lake had an enormous area, and had been told tales by them of vessels which were said to sail the waters of a river a long way to the north, which was connected to the lake at his feet. Speke had previously heard a similar story when in the Somali country; he had been told of a sheet of water, as large as the Gulf of Aden, which was navigated by white men, but he, at that time, thought the story referred to the Atlantic Ocean in the far far west. These stories were now confirmed, in some measure, by the natives living in the neighbourhood of the lake. Some of them told him they had never heard of it having any end, while others were able to give him an estimate of its width, and tell him of the tribes and peoples living on its banks.

Speke himself was unable to see very far to the northward, owing to a large island known as Ukerewe by the natives, and which was doubtless the origin of the name by which the Arabs knew the lake. He was able to ascertain, however, that the sheet of water extended far to the northward beyond the island, and felt little doubt in his own mind that the tales he had heard, of the waters being navigated by white men, referred to the expedition of Mahommed Ali, which had reached the neighbourhood of Gondokoro, on the Nile. He believed the river must be joined to the lake at its north end, and that the natives had confused the river to the north with the lake itself in repeating the stories they had heard, and which had almost become legends, about the white men and their ships. The lake was known to the natives by the term Nyanza, to which Speke prefixed the name Victoria, in honour of the queen he delighted to serve.

On rejoining Burton and telling him of his discovery, and his theory connected with it, Speke met with little or no encouragement. Burton could not believe there was any great value attached to Speke's discovery. He would not for a moment admit, that there were any good grounds for believing, that the lake extended to the great distance northward believed by Speke; and refused altogether to countenance the hypothesis of its being a source, or *the* source, of the White Nile. Burton, therefore, in his official map, only shows the small portion of the lake actually seen by his companion, and vigorously opposed Speke's theory on their return home.

On returning to England Speke published articles in the journals of the day, in which he stated his belief that his Victoria Lake would prove to be the source of the White Nile. In his map he showed a range of hills round the north end of Tanganyika, which he believed to be the Mountains of the Moon of the ancients. These mountains thus appear again in a new form and place, but still in the neighbourhood of Unyamwezi, the country of the moon.

Speke proposed to again visit Africa to further investigate the geography of the new-found lake. His view was to penetrate, if possible, the countries to the north of the Victoria Nyanza, and search for an outflowing river; which, if found, he proposed to follow and try to establish its identity.

The Royal Geographical Society entertained Speke's view, and under its auspices a new expedition to Central Africa was set on foot. Speke was appointed leader, and his friend Captain Grant, also of the Indian army, was appointed to assist him.

On April 27th, 1860, Speke and Grant set sail for Zanzibar, and soon after were *en route* for Central Africa. Kazé was reached in January, 1861. Speke was again hospitably entertained by the Arab settlers, and was able to reorganise his expedition previous to penetrating the unknown country lying between him and Karagwe, a country to the west of the Victoria Lake. He was able to get valuable information, from the Arabs, of the countries and peoples it would be his lot to pass through, besides instructive hints on the geography of the land. It is interesting to note that one of the items of information imparted to Speke by the Kazé Arabs on this journey, and recorded in his journal, was the statement that at a great distance to the northward of Karagwe there existed a high mountain, on which "white powder" was said to fall. I beg you to notice this point particularly, as it has a direct bearing upon something we shall have to consider later on.

Karagwe was reached in course of time, and the expedition met with considerable kindness from Rumanika, the king. This sable monarch proved himself to be a perfect African gentleman, which character he still maintained when visited by other white men in later times. Speke here discovered a beautiful little lake, which at the suggestion of Grant he named Lake Windermere, as it reminded Grant of our own Cumberland water. Flowing through this lake a river was discovered which was known to the people as the Kitangule; it was flowing in the direction of the Nyanza, and Speke was assured that it emptied itself into that lake.

On the journey from Karagwe to Uganda, Speke obtained the first view of the great lake during this expedition. The portion seen was at the north-west corner.

Owing to the difficulties met with, the travellers were unable to see very much of the Nyanza while in Uganda; but they were able to get considerable verbal information from Mtesa the king, and from the people. Speke learned that there was a river, which, coming out of the lake, flowed northwards through the country of Unyoro. He also learned of the existence of another large lake to the north west, known as Luta Nzige. In addition to this, he was informed that there was another lake to the east, beyond Usoga, from the neighbourhood of which the Waganda (people of Uganda) obtained salt. It was stated that a river flowed to the northward out of this lake, and joined the river which flowed from Uganda, thus making Usoga an island.

Speke and Grant, having obtained permission from Mtesa to leave Uganda for Unyoro, and a promise to be allowed to visit the outlet from the lake before doing so, made their arrangements, and bid the king good-bye. Grant went on with a portion of the expedition, with a view of travelling to the court of Unyoro by land, while Speke made a journey to the river which flowed from the Victoria. He struck the river at Urondogani, and from there traced it back towards the lake until he reached the place of exit. He found that the river flowed out of the Nyanza over a waterfall about 12 feet high, and from 400 to 500 yards wide. He named this cascade Ripon Falls, in honour of the president of the Royal Geographical Society.

On his journey to the river, Speke had crossed several gulleys, which he calls "rush-drains," and which he shows on his map as minor outlets from the lake, joining the main river a little way to the north. With reference to the reputed lake and river beyond Usoga, Speke believed this to refer to Lake Baringo, which had previously been heard of by the Mombasa missionaries. He therefore shows this lake in his map in dotted lines, joined by a creek to the Nyanza.

After having satisfied himself with regard to the outlet from the Victoria Lake, Speke endeavoured to follow the river through Unyoro. He was, however, not permitted to do this, but was compelled by the suspicion of the Wanyoro (people of Unyoro) to visit the court of King Kamrasi by the land route.

Being detained in Unyoro for some while, Speke made the best use he could of the time by collecting information from the people on the geography of the district. He here received confirmation of the tales he had heard about the other lake (Luta Nzige), in Uganda and elsewhere; with the additional statement that the river which flowed from the Nyanza, through Uganda and Unyoro, fell into the Luta Nzige; from whence it again issued a little further north and continued its northward flow. He and Grant were, however, quite unable to follow up this clue. They had by this time, after three years' wanderings, nearly exhausted all their goods, and were obliged to make for Gondokoro as straight as possible.

News reached the travellers at Kamrasi's that white men were awaiting them in the vicinity of Gani, a district to the northward. They, therefore, pushed on in the hope that it might turn out to be Petherick, an English ivory trader, and his people, with whom an arrangement had been made before starting from Zanzibar, for assistance to be rendered them in this neighbourhood. The camp of the so-called white men was duly reached. They turned out to be an ivory-hunting expedition, consisting of a motley crowd of Turks, Nubians, Egyptians, slaves, &c., under the leadership of one Mahomed, who owned Petherick as master. Petherick himself was not there.

It was not long after this that Speke and Grant reached Gondokoro clad in honourable rags, but bearing the secret of the White Nile in their pockets. On the way they visited the Asua River, which flows from the south-east and enters the main stream of the Nile. This river Speke supposed to flow from the Baringo Lake, and it is so marked in his map.

The travellers were met at Gondokoro by Mr. and Mrs. Baker—afterwards Sir Samuel and Lady Baker—who had fitted out an expedition with the intention of aiding the travellers, if they required help, or of making an attempt to settle the problem themselves, if Speke and Grant had failed. Baker placed his chartered vessels at the disposal of the travel-worn explorers, who were thus enabled shortly afterwards to reach the confines of civilisation. Speke then cabled his now historic message to England: "The Nile is settled."

During the time that Speke and Grant were associated with Sir Samuel and Lady Baker at Gondokoro, they explained to them what they had heard from the natives of the Luta Nzige, and gave them full information of the country lying between Gondokoro and the court of Kamrasi of Unyoro. The result was that Baker determined to push on there, in the hope of being able to discover the lake which the home-coming travellers had been obliged to leave.

Sir Samuel and his heroic wife, therefore, bid good-bye to Speke and Grant and turned their faces southward for Unyoro. The ivory-trading and slave-raiding Turks were very jealous of the English travellers breaking through the veil, which had hitherto hidden their nefarious traffic from the world, and put all kinds of obstacles in the way, trying their best to make them give up the quest. In addition to this Baker had great difficulty with his own people, who were so cowardly that they feared to follow their leader into the unknown regions to the south. After many difficulties and numerous narrow escapes, however, the intrepid travellers reached the country of King Kamrasi.

Here they found themselves obliged to suffer the cupidity of one of the most avaricious and greedy beings it is possible to imagine. They were for some time subjected to a process of extortion. Every article in their possession was begged for in turn. When, after with great difficulty getting the king to give them an escort, they were about to turn their steps in the direction of the lake, Baker was asked to make an exchange of wives before he left. You may imagine that the travellers' cup was at last full to overflowing. Lady Baker was very naturally terrified at such a request, and Sir Samuel was more than indignant! Drawing a revolver he held it to the breast of the greasy villain who had made the request, and told him if he dared to repeat it, all the strength of the kingdom of Unyoro would be powerless to save his life!

The journey to the lake was at last commenced, but, whilst crossing a swamp on the way, Lady Baker was struck down with sunstroke, and was afterwards carried on, day after day, in a totally unconscious condition. Baker himself was broken down with fever, and he says that one day they were both so near death that one of their people actually went the length of making a new handle for their pick-axe to dig their graves with. At last, however, Sir Samuel and the devoted Lady Baker both recovered, and in due time they were rewarded for their sufferings by the first view of the Luta Nzige.

They struck the lake some distance to the south, on its eastern shore. Here they obtained canoes, and set sail on a voyage of exploration, being without doubt the first white people to float on the waters, to which they gave the name of Albert Nyanza, after the royal consort of our beloved queen; fitting name for the lake to receive, as it is the geographical consort and companion of the Victoria Nyanza. Their voyage was continued to the northward along the eastern shore until, at the north-east corner, they found an inflowing river. Passing down this some little distance, they beheld a sight which must hold a prominent place in their memories to the end of their lives. This was a lovely cascade formed by the Somerset River, which Speke had seen flowing from the Victoria Nyanza over the Ripon Falls, now plunging headlong some 120 feet down into the Albert Lake. Baker named this Murchison Falls, in honour of the then president of the Royal Geographical Society. Leaving this point, and paddling further to the north, they found the outlet of the lake and beheld the river there flowing away to the northward.

They now retraced their steps to the capital of Kamrasi, and as soon as they could free themselves from the power of this potentate made the best of their way back to civilisation.

This journey and discovery of Baker's is the more remarkable in the annals of daring and dangerous travel, from the fact that its dangers were shared by Lady Baker, then a young wife, I believe, still in her teens.

Another lady who did good service, about this same time, was a brave Dutch lady, Mdlle. Tinné, who penetrated the marshy districts of the Bahr-el-Gazelle. She, unhappily, eventually lost her life in the country. Petherick and the Italian traveller Miani also pursued their researches in the same district.

The discoveries of Speke and Grant, and of Baker, when brought to the notice of the public of Great Britain, again set the whole geographical world in a state of excitement. Speke was received with open arms by the public, and was justly feted and praised. In articles he wrote and speeches he delivered at the time, he claimed that he had in 1858, "hit the Nile on the head, and in 1863 driven it down to the Mediterranean." Captain Burton was still unconvinced of the value of his quondam companion's discoveries. Theoretical geographers came forward with all kinds of theories, and the whole subject was discussed from various points of view.

In September, 1859, Livingstone had discovered the Maravi or Nyasa Lake, and this was in turn dragged into the general discussion of the geography of the lake regions of Africa. One theory set forth was that Tanganyika must be connected to Lake Nyasa, and by that means contribute its waters to the Zambesi. In time the position of Speke's Mountains of the Moon was modified, and the whole range subsequently disappeared altogether from the maps; and the Rusizi River, at the head of Lake Tanganyika, was again made to play the part of a theoretical outlet.

Captain Burton prepared a paper for the British Association, which he afterwards enlarged and issued in book form under the title of the "Nile Basin." In this work he expressed his belief that the Tanganyika would ultimately prove to be identical with the western of Ptolemy's lakes forming the Nile fountains. He altogether opposed the idea of the lake seen by Speke in 1858 being identical with that seen by Speke and Grant some years later in Uganda. In support of his view was the fact that Speke gave a considerable difference in the levels of the waters seen by him in the south and north, besides which it had been stated by Arabs that there was actually a road right through the district which Speke's lake was supposed to occupy. With regard to the Mountains of the Moon, Burton appears to have believed that the range was represented by Mounts Kilimanjaro and Kenia, and the highlands by which they are connected. This was practically the view suggested, so long before as 1848, by Dr. Beke, the Abyssinian traveller who claimed to be the "theoretical discoverer" of the Nile sources. You will find the mountains so placed in the map which I have copied from his book, published shortly after Burton's discovery of Lake Tanganyika. This map is instructive, also, from the fact that it applies Ptolemy's lakes and Mountains of the Moon to a modern map.

The following quotations will, I think, sum up the opinions of Burton, who it must be remembered represented a certain school of geographers at the time. He says the alterations he would make in Speke's map were: "(1) Draining Tanganyika into Luta Nzige." I may say here that Baker had understood from the natives that a canoe could actually be paddled from the northern lake right down to Ujiji, on Tanganyika. "(2) Converting the Nyanza (Victoria) into at least a double lake;" and "(3) Detaching the Baringo from the Nyanza waters." Speaking of the Asua River he says: "I believe it to be the real White Nile, the so-called Nyanza effluents being of minor importance;" and further, "I cannot but believe the Tanganyika to be the Western lake-reservoir of 'Father Nile.' . . . That the Tanganyika is the western top, head, or reservoir—not *source*—of the great Nile, and that the Baringo . . . is the eastern, I have little doubt."

In the midst of these discussions poor Speke met with the accident that so suddenly terminated his life.

Livingstone, who was then in England, after his second Zambesi expedition, leaned to the opinion that Speke was to some extent mistaken as to the importance of the lake he had discovered. He believed that Lake Tanganyika would be found to play an important part in the geography of the Nile, but was altogether opposed to the idea that it was connected to the Nyasa.

The result of these discussions and varying opinions was that Livingstone, at the invitation of the Royal Geographical Society, set forth again for Central Africa, to endeavour to clear up the doubtful points. This expedition proved to be, perhaps, his greatest work; but, alas! it was his lot never to return home alive, nor to understand and grasp the full value to the world and civilisation of the discoveries he then made. It is a remarkable fact, that although Livingstone devoted a great portion of his existence, and eventually gave his valuable life for the Nile, it was never his lot to gaze upon its waters, except perhaps in Egypt! Nevertheless, his discovery of the Congo sources is likely to prove, indeed has proved! of far more value in the opening up and civilisation of Africa than the Nile is ever likely to be!

Must I apologise for introducing the work of Livingstone into this paper? I would plead that no history of Nile research can be complete that does not refer to the devoted wanderings of this noble and unassuming hero! The additions to our knowledge of the interior of Africa, and the vast blanks upon the map which were filled up by Livingstone on his last mission, are well known to all; but, as there is such a deeply pathetic side to the story of his wanderings and discoveries, I crave your indulgence for a few minutes while we notice what they were, and refer to the hopes and fears which were awakened in the heart and mind of the heroic traveller.

Livingstone, as you are aware, started from the mouth of the Rovuma and marched towards the Nyasa. He then skirted the eastern shore of the lake towards the south, and crossed it at its south end. His steps were then directed towards the north-west until he struck the south end of Lake Tanganyika. This set at rest the question of the connection of Tanganyika and Nyasa, and for the first time fixed the southern end of Lake Tanganyika. Writing on this point Livingstone says: "One bold constructor of maps has tacked on 200 miles to the north-west end of Lake Nyasa, a feat which no traveller has ever ventured to imitate. Another has placed a river in the same quarter running 3,000 or 4,000 feet up hill, and named it the New Zambesi, because I suppose the old Zambesi runs down hill. I have walked over both these mental abortions, and did not know that I was walking on water till I saw them in the maps."

Leaving Tanganyika, Livingstone travelled westward, discovered Lake Moero, and then worked southward, along the banks of the Luapula, till he discovered Lake Bangweolo, and proved that the Chambeze River flowed into that lake. The Chambeze had been previously known to the Portuguese, but was believed by them to be a branch of the Zambesi, doubtless in great measure owing to the similarity of names. Retracing his steps, northwards, Livingstone followed a river, flowing from Lake Moero, under the name of Lualaba. This he traced as far as Nyangwe, in Manyemma, but was there obliged to turn back and retrace his steps to the Tanganyika, which lake he crossed to Ujiji.

The great river he had been following he believed to be the Nile. The following extracts from a letter he wrote to Lord Clarendon will, perhaps, best indicate his opinions and beliefs in this direction. He says: "I have ascertained that the watershed of the Nile is a broad upland, between 10° and 12° south latitude, and from 4,000ft. to

5,000ft. above the level of the sea. Mountains stand on it at various points. . . . The springs that rise on it are almost innumerable—that is, it would take a large part of a man's life to count them. . . . These are the ultimate or primary sources of the great rivers that flow to the north in the great Nile valley. . . . The mountains on the watershed are, probably, what Ptolemy, for reasons now unknown, called the Mountains of the Moon. From their bases I found that the springs of the Nile do unquestionably arise. This is just what Ptolemy put down, and is true geography. . . . I have a very strong impression, that in the last hundred miles the fountains of the Nile, mentioned to Herodotus by the Secretary of Minerva, in the city of Sais, do arise, . . . and half the water flows northward to Egypt, the other half south to Inner Ethiopia." Again he says: "In my attempts to penetrate farther and farther, I had but little hope of ultimate success; for the great amount of westing led to a continual effort to suspend the judgment, lest, after all, I might be exploring the Congo instead of the Nile."

These quotations prove that Livingstone believed he had discovered the head waters of the Nile in what we now know to be the sources of the greater stream, the Congo. Another quotation taken from his last journals, and which is, of course, familiar to all, seems to show what it was that caused him to form the theory he did. He writes: "One of my waking dreams is that the legendary tales about Moses coming up into Lower Ethiopia, with Merr, his foster-mother, and founding a city which he called in her honour Meroe, may have a substratum of fact. . . . I dream of discovering some monumental relics of Meroe." This seems to have influenced him somewhat in forming his opinions, but it was, of course, greatly borne out by the facts he observed when viewed in the light of the imperfect information he possessed.

It was when Livingstone visited Ujiji, after his journey to Nyangwe, that he was discovered in a state of illness and destitution by Stanley in 1871. Up to this time Livingstone believed that the Rusizi River at the north end of Tanganyika was the outlet from the lake; and that it flowed through the Albert Nyanza of Baker, and so found its way to the Nile. At the suggestion of Stanley they together visited the north end of the lake, and proved for ever that there was no outlet there, and that the lake was at any rate not connected with the Nile in that direction.

Livingstone believed that the River Lualaba, that he had followed so far, ultimately found its way into the Nile by continuing its flow northward until it joined the Bahr-el-Gazelle of Petherick.

On being left by Stanley the heroic and aged explorer again visited the neighbourhood of Lake Bangweolo, in search of the ultimate fountains of Herodotus and Ptolemy; but laid down his life on the shores of the lake, without ever completing the knowledge he was in search of, or knowing the value of the discoveries he had made.

Livingstone's work was a grand one! although it was never completed, and therefore did not directly result in the object he was striving for. He did not discover the sources of the Nile!—he was never even permitted to gaze upon the upper waters of the historic river!—but who shall say that his work did not ultimately lead to the settlement of the problem, and of the problem of the Congo too? Did not the influence of the "old explorer, a grand spectacle and a specimen of most noble manhood," fire the zeal of the young American who was sent into Central Africa to find and aid him? Did not his enthusiasm, for Africa and the African, enter into the very soul of the younger man; causing him to devote his best energies, and best days, to the completion of the work, which his aged companion and friend had relinquished only with his life? Yes! Surely we may say, that when the young American discovered and relieved the aged Livingstone at Ujiji, the elder man in return gave to the world a Stanley; who was to take up and complete the life-work of the fallen hero, and become himself the greatest explorer of the ages!

Many doubtful points had been cleared up by Livingstone, but just as many new problems had come to the front and remained to be solved. He had proved that the Nyasa and the Tanganyika were certainly not connected; and he and Stanley had together visited the Rusizi River, and set at rest the mystery as to the direction of its flow. On the other hand, he had discovered the great lacustrine stream, the Lualaba, and it was quite unknown whether it belonged to the system of the Congo; or, as was supposed by him, to that of the Nile. No outlet had been discovered to Lake Tanganyika, and doubts were expressed as to whether the lake possessed an outlet at all, in spite of the freshness of its waters. Livingstone had hinted at a possible subterranean outlet, but no satisfactory evidence of this existed. Lake Victoria Nyanza, of Speke, had been split up into several on the map of Livingstone, based on Arab and native report. And, altogether, the whole question was as much mixed as ever.

This then was the state of affairs, when, in 1874, Stanley stepped into the breach, resolved, if need be, to become "the next martyr to geographical science;" or, if spared, determined, if possible, to clear up all that remained still problematic and incomplete of the discoveries of Burton, Speke, and Livingstone!

Setting forth for Africa, Stanley landed at Zanzibar, and soon after pushed into the interior, arriving at the south end of Lake Victoria on February 27th, 1875. He almost at once commenced a survey of the lake. We cannot follow him on his voyage; it must suffice to say that he circumnavigated the lake, following every indentation of the shore except at the south-west corner. Here, owing to the warlike character of some island tribes, he was unable to do so, so thoroughly as elsewhere. This point we shall have occasion to refer to again presently. His survey proved that Victoria Nyanza was, as Speke had claimed, *one* large lake, but having no connection with the Baringo.

Stanley next tried to reach the lake discovered by Baker, with the intention of sailing its waters and surveying its shores. This he was unable to do, owing to difficulties which we cannot now go into. He did reach a lake to the west, lying on the equator, and which he believed at the time to be the Albert Lake, it being known to the natives as Muta Nzige. To a large gulf of this water, viewed by him, Stanley gave the name of Beatrice Gulf. Baulked in his intention of surveying the Muta Nzige, the traveller at once "made tracks" for the Tanganyika, passing through Karagwe, formerly visited by Speke and Grant, and making the acquaintance of the "gentle

Rumanika" on the way. While in Karagwe, Stanley was able to learn a great deal about the geography of the Kitangule River of Speke. He gave it the name of Alexandra Nile, in view of its being the largest affluent of the Victoria, and therefore the main feeder, in that direction, of "Father Nile." He heard of the existence of a lake from which the river was said to flow, which he named Alexandra Nyanza. This lake, I believe, has never yet been visited by Europeans.

On reaching the Tanganyika Stanley found that Lieut. Cameron had forestalled him. That gentleman had left for the interior to assist Livingstone just prior to the receipt of news of the aged traveller's death. Having reached Lake Tanganyika, Cameron, as was natural to a British naval officer, proceeded to make a survey of the southern half of the lake. The result was the discovery of an outlet on its western side. Stanley also voyaged round the lower half of the lake, and thus completed his own circumnavigation of Tanganyika, he having, as we have seen, previously surveyed the northern portion in conjunction with Livingstone. He was able to confirm Cameron's discovery of an outlet, by means of which it was then supposed, and has since been almost proved, that Tanganyika pours its surplus water into the Lualaba.

Stanley now turned his steps towards the majestic but mysterious river, determined to clear up its mystery or die in the attempt! He found that Cameron had followed the stream until he reached Nyangwe, but here, like Livingstone, had been compelled to abandon the quest.

Stanley was able to take up the work at this point and follow it to a successful issue. He followed the river through every conceivable difficulty, with terrible hardships, and with great loss of life; but he followed it successfully to the ocean, and thus proved that the great river of Livingstone, and which Stanley named after its discoverer, was really the Congo, and in no way connected with the Nile, as Livingstone had supposed. We must not digress to follow Stanley on this adventurous voyage; our subject is the Nile, and we must leave the Lualaba altogether, from the moment that it ceases to have any problematic connection with the river we are considering. Thus was one more point definitely settled.

During the time that Stanley was engaged exploring Lake Victoria, and tracing the Lualaba to the ocean, Gordon had been engaged on the Nile, in the neighbourhood of the Albert Lake. He and his lieutenants —Gessi, Long, Mason, and Linant—had followed the river from Gondokoro to Lake Victoria, and had surveyed the portions between the points seen by Speke and Grant, and Baker.

Gordon himself discovered the Fola or Mekade Falls, doubtless the point which was reached by the expedition of Nero; and Long discovered Lake Ibrahim, or Gita Nzige. Gessi circumnavigated the Albert Nyanza, and it was again circumnavigated and surveyed by Mason, and Gordon himself sailed its waters.

The surveys of Gessi and Mason proved that the Albert Lake was far shorter than had been previously supposed, and this fact led to the water known as Muta Nzige, seen to the south by Stanley, in 1876, being considered as a distinct lake altogether. Thus the whole question of the Nile sources appeared to be practically settled, the only point apparently remaining incomplete being the problem of the Muta Nzige. Did it belong to the system of the Nile, or to that of the Congo, and what was its area and extent?

These points remained in a state of uncertainty until Stanley was himself again taken to the neighbourhood on another quest, the relief of Emin Pasha in 1887. From 1876 to 1888, twelve years, we got no further information of the geography of the Muta Nzige, and indeed there appeared to be little to learn. The sequel, however, proved that there were still some interesting facts for the geographer, which had been slumbering and hidden in the recesses of "Darkest Africa." One of the greatest of these, and perhaps the most interesting of all, it was the lot of Stanley to discover.

The "Mountains of the Moon" had been talked of and written about since the days of Hekotæus, Hipparchus, and Ptolemy. Various travellers and geographers, as we have seen, had propounded different theories with regard to their probable situation, and others had endeavoured to explain the whole thing away as a mere myth. Beke, Burton, Speke, and Livingstone had each theorised on this point, but with little success, until the world had quite looked upon the matter as mere legend, or as ancient travellers' tales. Stanley himself never betrayed any sign of having any distinct theory on this matter, and has generally been content to confine himself to facts proved to demonstration. It was the lot, however, of our latest, and perhaps greatest, traveller to have the honour of actually discovering, and geographically locating, the long-lost and wandering "Mountains of the Moon."

While resting on the plateau land above the south-west corner of the Albert Lake, on the 25th of May, 1888, Stanley's attention was called to a towering mountain height capped with snow, which, from where he stood, lay about 50 miles away to the south-east. Twelve months later on his homeward journey, after crossing the Semliki River, which he found flowing into the south end of the Albert Lake, Stanley found himself following a range of hills the tops of which, towering up some 19,000 feet high, were covered with perpetual snow. This, melting under the action of a tropical sun, poured its volumes of water into the Semliki River at his feet, which in turn conveyed it thence to the Albert Lake and onwards to swell the torrent of "Father Nile."

Stanley writes: "Little did we imagine it, but the results of our journey from the Albert Nyanza to . . . where I turned away from the newly-discovered lake in 1876, established beyond a doubt that the snowy mountain, which bears the native name of Ruwenzori or Ruwenjura, is identical with what the ancients called 'Mountains of the Moon.'"

"Note what Scheadeddin, an Arab geographer of the fifteenth century, writes: 'From the Mountains of the Moon the Egyptian Nile takes its rise. It cuts horizontally the equator in its course north. Many rivers come from this mountain and unite in a great lake. From this lake comes the Nile, the most beautiful and greatest of the rivers of all the earth.' If, adopting the quaint style and brevity of the Arab writer, we would write of this matter now, we would say: 'From Ruwenzori, the Snow Mountain, the western branch of the Upper Nile takes its rise. Many rivers come from this mountain, and uniting in the Semliki River, empty into a great lake, named by its discoverer the Albert Nyanza. From this lake, which also receives the eastern branch of the Upper Nile, issues the true Nile, one of the most famous rivers of all the earth.' "

You will remember that Speke was told, by an Arab at Kazé, that to the north of Karagwe, a high mountain was to be found which was covered by "white powder." Surely it must have been the snow-capped Ruwenzori which was then referred to!

Continuing the homeward march, the Muta Nzige was visited by Stanley, and three of its sides followed. It is found to pour its overflow waters through the Semliki River into Lake Albert, and is, therefore, the south-western source of the "holy river." Stanley and his officers decided to give the name of Albert Edward to the newly-defined lake, in honour of our Prince of Wales. I may, perhaps, be forgiven if I suggest that the names of the three lakes, Victoria, Albert, and Albert Edward, do not, in view of our most recent knowledge, seem to be so well arranged as they might be. The Nyanza of Speke and the Muta Nzige of Stanley together give birth to the lake of Baker. Would it not, therefore, be more in keeping with the facts of relationship if the lakes of Stanley and Baker could change names? We should then have the Victoria and the Albert for the parents, and the Albert Edward as the natural offspring of both!

There is one other link in the chain of our tale to tell. You will remember that I referred to a difficulty that Stanley met with, when surveying the Victoria, in following the shore line at the south-west corner. Well! at this point, on his return journey last year, Stanley struck the lake, and what was his surprise to find that there was there an extension which he had overlooked at the time of his voyage in 1875. The bay, or extension, is calculated to cover an area of 6,000 square miles, equal to the whole of our county of Yorkshire. I have proposed, in a paper which I recently read before this Society, to call this extension Stanley Bay, in honour of the traveller who has done so much to make known the geography of the lake. I fear I can hardly hope that my suggestion will be adopted.

I have now, in my crude and imperfect manner, put before you the leading facts connected with Nile research and discovery. I think you will all agree that the knowledge of the river, which is now fairly complete, has only been obtained at the cost of great determination, unbounded energy, and intrepid bravery; and that we may truly call such men as Bruce, Burton, Speke, Grant, Baker, Livingstone, Gordon, Stanley, and others, heroes of a high order. The knowledge which their devotion has brought to light is of great value; but I think that Nile history teaches us a powerful lesson of the frailty, weakness, and puny ability of the best and bravest men it is the world's honour to give birth to and possess. As one hero after another has thrown himself at the problem of the Nile, and in turn retired more or less beaten, has not the river spoken to us plainly and in thundering tones, and, using the language of Tennyson, told us:

> "Men may come and men may go,
> But I go on for ever."

EARTH-SCULPTURE, AS ILLUSTRATED IN THE GORGES OF THE TARN, AND AT MONTPELLIER-LE-VIEUX, SOUTHERN FRANCE.

(*Illustrated by a Magnificent Collection of Photographs.*)

By Mr. MARK STIRRUP, F.G.S.

[Addressed to the Members, at the Schiller-Anstalt, Monday, Nov. 24, 1890.]

I COME before you this evening to give an account of a visit I paid, in the spring of this year, to the "Causses of Languedoc," a district of whose curious and interesting natural phenomena I had the honour last year, through the kindness of M. Martel, of Paris, one of its explorers, to show you some unique photographic views, and to describe some of its most remarkable features.

On the present occasion I do not intend to take up your time by relating any of the ordinary incidents of travel that befall visitors to a somewhat sequestered and isolated region, but purpose confining myself to the consideration of some of the more important physical and physiographical lessons which an examination of this district has to furnish. Suffice it to say that the journey to this land of novelties, though in a certain degree wearisome, caused by the slow rate of travel and railway delays, may be comfortably accomplished, if not pressed for time, in three or four days from Manchester.

The most direct route is through Paris, starting thence from the Lyons Railway terminus, *viâ* St. Germain des Fossés, to Arvant, where you join the Ligne du Midi.

A pleasant break in the journey may be made at Clermont Ferrand, which lies under the shadow of the Puy de Dôme, and within easy access of some of the most interesting of the extinct volcanoes of Central France.

Having reached Arvant, you have the choice of two routes of approach to the Pays des Causses by either of two lines of railway, the Ligne du Midi and the P., L., & M., to Nîmes and Marseilles, both of which pass southwards and bound the country of the Cevennes on the western and eastern sides respectively.

If you take the former, you pass by Neussargues over the celebrated structure of M. Eiffel, the Viaduc de Garabit,* the span of whose arch and height above the valley below was said to be the greatest in the world, but it is now considerably exceeded in extent of span by the Forth Bridge, near Edinburgh. The

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* t has been calculated that the second platform of the Eiffel Tower could easily pass under the arch of the Viaduc de Garabit, and that the towers of Notre Dame de Paris, with the column of the Bastile on the top of them, would still not reach the level of the rails by about 24 feet.

Ligne du Midi gives you also the opportunity, by stopping at Marvejols and taking the branch line to Mende, to enter the country of the Causses from the north; but should the tourist be pressed for time, it is better to continue on the main line as far as Millau, which is the nearest station and easiest route to Montpellier-le-Vieux. If, on the other hand, the traveller proceeds from Arvant on the Nîmes line, passing to the east of the Cevennes, Villefort or Alais would perhaps be the most convenient stations, though both are some considerable distance away from the Gorge of the Tarn and Montpellier-le-Vieux.

The recent extension of the Ligne du Midi and completion of the Viaduc de Garabit have been the means of opening up this old-world corner of France, previously unknown to the ordinary traveller, whose varied natural attractions I had the pleasure of bringing under your notice a few months ago.

As you might expect, a peasantry thus isolated from communication with the outer world were both ignorant and superstitious. They took no interest in the natural phenomena by which they were surrounded, whose wonders they did not comprehend, and of whose picturesque value they had never dreamt. Their river gorges of abnormal depth, the subterranean caverns and hidden streams of their calcareous plateaus, their fantastic rocks perched high above the valleys, had no meaning for them. Everything abnormal and strange in the appearance of things was conceived to be the work of the Evil One, and in consequence that extraordinary labyrinth of rocks named Montpellier-le-Vieux, or the City of the Devil, was avoided, from motives of fear and superstition, and none but the adventurous shepherd ever trod its devious paths. These barren rocks were not considered an attraction to the locality, but rather an excrescence on the fair face of nature; therefore no passing traveller ever had his attention drawn to them. Now, however, since a tide of tourist traffic has been turned this way, the inhabitants find a source of unexpected wealth in these weird spots they had previously shunned.

This region, however, claims mainly our attention because it offers a remarkable example of one of those fundamental and elementary truths with which the geologist or the physical geographer has to deal, viz., the power of rain, in the shape of running water, to sculpture and modify the surface features of the land.

Other agents there are which have played their part in moulding certain portions of the earth's surface, and which still labour on in their destructive and never-ending work, such as the glacier flow and the ocean surge, but of these I do not intend to speak to-night.

Water is the great solvent of rocks, and, with the aid of frost, one of the great agents of rock disintegration and decay.

But the power of water to erode is modified and restricted by the character and mineral composition of the rocks themselves.

Some rocks are hard and compact, and seem to defy to the uttermost the attacks of weathering and denudation, as in the case of some granites and crystalline rocks, while others of a softer nature yield readily to external meteoric influences, as various clays, shales, and limestones.

It is to the various modifications in rock structure and composition that we owe that charming diversity which the earth's surface presents—not one dull uniform level, as it otherwise would be, but that pleasant interchange of mountain and plain, hill and valley, ravine and scar, which stamp the picturesque.

Those dizzy heights which the mountaineer delights to scale would not exist if they were not composed of materials altogether different, or differently combined, from the rocks which form the lower hills or the surfaces of the valleys. It is the hard rocks which form the mountains, and the soft ones the valleys.

This diversity of resistance to meteoric influences is the immediate and controlling cause of those varied contours which land surfaces present. Thus you will see that the sculpture of the land is intimately associated with its rock structure.

The rate of this process of sculpturing and denudation is influenced by many circumstances, among which altitude and climate are the most important.

In a land where the rainfall is great and its rocks exposed, *i.e.*, bare of vegetation, the erosion will be rapid; and where the slope of the mountains is steep, there the work of disintegration and erosion will be most manifest.

These agents of destruction of which I have spoken would, at length, if there were no counter-action, no corresponding elevation of the earth's surface, carry the dry land beneath the surface of the sea.

In Nature's economy, however, compensatory movements do exist, such as the gentle and gradual uplift of the land which has been detected in Sweden, and those more visible but violent and terrible upheavals due to active volcanic forces—indeed, the record of the earth's history is one of continual change and movement. When the land first rose from the sea, then its sculpturing began; when the mountains were uplifted, then the rain first channelled a path down their slopes, eroding in its passage the surface over which it travelled. The particles thus eroded from the parent rock are gradually transported to lower levels, to fill the valleys or cover the plains; but they rest not there—the march is in time again resumed, until those grains of sand or mud reach their destined goal, the ocean. There, at last, they will lie tranquil until raised again by some earth movement at a subsequent geological epoch, when the cycle of revolution will again commence. So the mountains are brought low and the valleys exalted, and the hills carried into the midst of the sea.

There was a time in the history of the earth, in its youth primeval, when its surface outlines did not present the rich variety of alpine heights, of crag and cliff, which now, in its maturer age, it offers to our view.

Truly it may be said that its face is scarred and furrowed with the elemental war of ages; yet all this fretting and chiselling have not marred its features, but only disclosed beauties once hidden deep below the surface, now revealed in forms of nameless shape, which astonish us with the boldness and fertility of Nature's art.

After these general remarks on earth-sculpture I must say a few words on the special examples that will be submitted to you in the photographic views taken from the Gorge of the Tarn and the plateau scenery of the Causses of Languedoc. The country locally known as the Causses is a dry and barren region, divested of wood, sparsely inhabited, and yielding few agricultural products; its area is some 50 or 60 miles square, and ranging from 2,600 feet to nearly 4,000 feet above sea level. It extends into the departments of the Lot, Lozère, Aveyron, Gard, and the Hérault. From its position on the map, its southerly latitude, not far distant from the shores of the Mediterranean, you might naturally presume that the climate would be a genial one, but this is not so, except in the deep and sheltered valleys, for climate does not depend on latitude alone, but on height above sea level, the direction of the prevailing winds, and other controlling causes. Owing to the altitude of the Causses, and their proximity to a high range of mountain land, the climate partakes of an alpine character, particularly rigorous in the winter, when deep snows cover their surface and violent storms sweep over them from the mountains. In the summer it is a dry and thirsty land, burned up with intolerable heat. The rain which should moisten and refresh the ground is not retained near the surface, owing to the porous and fissured nature of the rock. The rain as it falls penetrates by innumerable cracks and swallow-holes to underground channels, by which it makes its way to the river gorges, whence it issues, often in considerable streams, from those mysterious springs which feed such rivers as the Tarn, the Jonte, and the Dourbie.

Among the special features of the Causses are its river gorges, narrow ravines or cañons, which separate the once continuous plateaus into three or four principal masses, divided by deep sinuous cracks, along which the rivers find their way. The walls of these gorges are for the most part vertical, rising from about 650 feet to, in some cases, nearly 2,000 feet above the stream.

The calcareous rock which forms the surface of the Causses is cracked and fissured in all directions, penetrated by numerous vertical and deep swallow-holes (*avens*), which are connected with countless and unknown caverns and tunnels, through which flow subterranean streams. These characteristics, together with the groups of eroded rocks of marvellous shapes which surmount the plateaus in several places, make it a region unique in France, if not in Europe. Nowhere, certainly, in Europe are clearer or finer evidences of the erosive action of water than in this secluded, and hitherto almost unknown, region.

The same kind of phenomena, doubtless, is to be seen in every limestone country, even near home, on the flanks of Ingleborough, or in Derbyshire; but such examples differ much in degree or intensity from those which we are at present depicting.

To find mightier instances than those to be submitted to you, we should have to visit the Western States of America, where in the High Plateau region of Arizona and Utah—that land of marvels—one might see the most marvellous river gorges in the world, where rivers flow in ravines thousands of feet deep and hundreds of miles long, through vast tablelands of nearly horizontal strata. In the language of one of the explorers, the view of the Grand Cañon of Colorado is one of the most sublime and awe-inspiring spectacles in the world.

This difference of degree or intensity of the erosive action of streams in various parts of the world is due not only to some difference in the mineral constituents or in the structure of the rocks, but to the effects of climate, whether humid or dry. The amount of rainfall must affect the process of erosion, and wherever the slope of the ground is steepest, other things being equal, there erosion will be the most rapid.

The rocks which produce the special scenery of the Gorge of the Tarn and the surrounding plateaus belong to what is known to the geologist as the Liassic and Jurassic formations, and consist mainly of a series of limestones, dolomites, marls, and clays, which frequently alternate and intermix. Rain, charged with carbonic acid, obtained from the air, and organic substances in the soil, acts, as you know, both chemically and mechanically upon limestone rocks, whereby its destructive power is much increased. Limestones and dolomites, rocks liable to be thus wasted and worn, form the principal constituents of the great walls of rock which border the Tarn and some of the neighbouring streams. (Dolomite is a limestone in which magnesia is associated in very strong proportion to the carbonate of lime, hence they are often called Magnesian Limestones.) It is especially due to these dolomitic rocks that all the picturesque features of the region of the Causses are due. Abounding, as they do, in joints and fissures, rain falling on their surface readily percolates the mass, finding its way by subterranean passages to the level of the valleys. The rocks being for the most part horizontally bedded, the vertical joints which traverse the dolomite cleave it into huge blocks and deep chasms, which give it the appearance of embattled cliff or pinnacled crag, upon whose summit many another fantastic form lies perched, delighting the student of Nature's architecture.

A few words in conclusion: You have seen by the photographic views the important part that water plays in sculpturing the surface of the earth, but its wonder-working and transforming power is not yet finished. Deep beneath the cracked and fissured surface of these limestone plateaus, dark corridors and caverns have been hollowed out of the solid rock, whose walls are clothed with all the beautiful imagery that stalactite and stalagmite can assume; but of these marvels the time and the hour forbid me to speak.

Probably, as these views of scarped cliff and sculptured rock have passed before your eyes, the thought may have arisen in your mind, How long can it have taken to carve and erode all these fantastic forms out of the once solid and unbroken rock? At what remote period of time did the work commence? Have we any means of gauging the length of time it has taken to perform this gigantic work? If you ask me for an answer to these questions, I should be obliged to say I do not know; I cannot tell.

We have no natural chronometer, no unit of measure, no standard of comparison, by which the lapse of time can be calculated. Attempts have been made, from time to time, to gauge the amount of weathering or surface waste of limestone, as in the case of slabs used for tombstones, the date of whose erection was known, the calculation resulting in the rough average of one inch of waste in 300 years being obtained as an estimate. Herr Pfaff, a German chemist, made careful experiments on a slab of Solenhofen limestone, when he calculated that a crag of such limestone would be lowered one metre in 72,000 years by the solvent action of rain. This would be at a rate six times less than in the former instance. D. Mackintosh gives one inch in a thousand years as the average rate of denudation of Mountain Limestone.

So many conditions or contingencies would have to be taken into account that estimates such as I have given can be of very little help in affording reliable data by which to calculate the age of the rocks of any past geological period.

In fact, no mystery is more inscrutable, no problem more difficult to solve, than the duration of geological time.

We ask the rocks, but they answer not—we scrutinise their sculpturings, but we cannot read the hieroglyphs in which the legend is carved. The record is unintelligible, the story of the past is yet untold.

A MOUNTAIN DISTRICT OF CENTRAL CHINA.

By Mr. E. G. HILLIER, of Tientsin.

[Read to the Members in the Library, December 19th, 1890.]

I HAVE been honoured with an invitation to relate to you some of my experiences during a recent trip I made in the mountainous districts of south-west Ichang. Descriptions of travel in China have been so often given before by able travellers qualified by scientific training, an advantage which I am sorry to say I do not possess, and the usual incidents of such a journey as I am about to describe are now so well known to everybody, that it is with considerable diffidence of my powers of making this paper an interesting one that I have committed myself to the task of preparing it. The route over which my companion and myself travelled is so far worthy of notice that many parts of it have never before been visited by a layman in European dress, and for the student of botany, geology, or any other branch of natural history, I can conceive of no more interesting field. Unfortunately, as I say, we possessed no qualifications for making observations of really scientific value, and I must trust to the fact of the scene of our travels lying among a mass of comparatively unexplored mountains and forests within only a few days' journey of an open port, to make a simple description of its incidents and scenery interesting to you.

I was attracted to the country in the first place by the accounts I had heard of its picturesque wildness and wonderful virgin growth of forest. And I may say that my appetite for beautiful scenery and rough primitive surroundings was amply satisfied. The prospect of sport was also another attraction, as I have always clung to the idea that an untouched forest country under the perfect conditions of climate that exist in Central China during the winter months would afford the sportsman an unequalled field for his passion, that pheasants could be knocked over with a stick, and bears and tigers slain in the ordinary course of self-defence from their attacks, provided indeed the engagement did not end the other way. This illusion I may say at once we were very early compelled to relinquish, and we soon decided that the man who wants to make a large bag cannot do better than confine himself to the valley of the lower Yangtze. The country we visited was for purposes of sport perfectly useless, and I imagine the same is the case all over the great mountain ranges of Central and Southern China. It is one thing for game to exist and quite another thing to shoot it, and although the accounts we received of the abundance of game were most inspiriting, we generally discovered on cross-examination of our informant that the place was 100 *li* further on, that he had never shot anything there himself, but that he knew people who had done so, and that with our superior weapons we were sure of success. Game exists, no doubt, in a certain quantity all over these mountains, but the thick and impenetrable jungle affords a cover to the wild birds and beasts, which they have no inducement to leave, at any rate during the winter months, when the scanty patches of maize stubble are lying fallow. In the Autumn, they say, before the grain is cut, the maize fields swarm with pheasants, pigs, and bears, which come down to eat the crops in such serious numbers that the country people have to sleep in the fields at night to scare them off. This is probably true in some parts, but the idea of going to shoot pheasants in July in a cornfield is rather shocking.

The Reeve's pheasant is fairly abundant, more so than the common ringed pheasant. The golden is very shy, and we only saw two the whole time, although our beaters frequently reported having put them up. Both species keep to the thickest cover, and their haunts are almost impenetrable. Imagine the side of a gorge 1,000 feet in height, and having a gradient of anything from 60° to 80°; sprinkle this plentifully with boulders and slabs of limestone rock, and cover it with a jungle of prickly oak, birch, and an occasional pine, rhododendrons ten feet in height, and a thick under-growth of creepers and thorns of every size and degree of toughness and sharpness. After penetrating 20 yards into such cover, hauling yourself painfully up with your left hand, your gun at half cock in your right, thorny creepers across your face and round your legs, an apparently impenetrable mass of jungle before you with probably a slippery moss-covered mass of boulders to negotiate, it is possible that a flock of half-a-dozen Reeve's pheasants may get up within five yards of you. You can hear, but you cannot see them, and as their tantalising whirr grows fainter in the distance, and you feel the hopelessness of the situation, you make a mental and forcible note, as you slowly extricate yourself from your thorny trap, that walking up pheasants in the jungle does not pay.

Travelling in such country is very slow. Seventy-five *li* in one day is a very exceptional stage to make, and is only practicable downhill and with the conditions of weather and roads in one's favour. I say roads, but it must be understood that in the districts over which we travelled there are no roads, but simply tracks in the mountains, which in many places it requires an experienced eye to distinguish from goat-tracks. In some places, however, where the difficulty of the country demands it, the route has been made practicable by what must have been expensive cuttings in the face of the precipices, and rocky steps, which sometimes seem almost interminable. All transport is accomplished on the backs of porters, and the native mountaineers, from the age of toddling upwards, are accustomed to carry the "pei-loong" or back-basket, a conical crate of bamboo slightly flattened to fit against the back, with two loops of flat bamboo passing over the shoulder, and sometimes of beautiful shape and workmanship. Everything is carried in or on the top of these from a baby to a picul of salt, and a "pei-loong" is as necessary an article of personal furniture in that country as an umbrella in England. The usual load for an able-bodied peasant, who is not what I might call a professional porter, is 50 to 70 catties, and he will carry that for 50 *li* a day for days together. The salt-porters, however, perform feats which it would take some of us all our time to rival. We met a gang of these on one occasion at the summit of the Sha Ho Pass, one of the highest points of our journey, and about 8,000 feet above the sea level. Unfortunately, my altitudes are somewhat guesswork, as my aneroid barometer came to grief a week after we had started. As the day was an interesting one altogether, I quote my diary in extenso, and it may convey to you an idea of the style of scenery that occasionally repaid us for hard work and rough accommodation :—

Thursday, 21st February.—Magnificent panorama from our lodging. Descended the mountain by the Pa Ta Kuai Pass and waded across a very cold stream in the valley at the bottom. Then up another steep gradient, round a precipice which gives its name "Kuan Ts'ai Kow" or "coffin-dell" to the valley below, said to be on account of the number of accidents that have happened from the precipice. From the pass at the top we had a fine view of a waterfall on the opposite side of the valley. The sun was hot and delightful, and we sat and basked, as we enjoyed the lovely scenery. The whole place seemed alive with springs of clear water which trickled and leapt down from the precipitous crags on all sides. After a slight descent we had another tremendous pull up a steep gradient, heavily wooded, and found ourselves among a series of wild peaks and crags covered with thick forest, certainly the grandest scenery we have seen yet. We eventually reached the highest point at the Sha Ho Pass, some 8,000 feet above the sea, and bitterly cold. At the rest house there we saw some porters of salt from Ku'ei-fu on the upper Yangtze, in Ssu-ch'üan. They buy salt there at 48 cash a catty, which they carry a distance of some 600 *li* across the mountains, in weights of 120 or 130 catties a man, to the districts beyond Ch'ang-lo-hsien or Shih-nan-fu, where it sells for 120 to 180 cash a catty. They do the journey in about a month in stages of some 20 *li* a day. We stayed for the night at the village of Sha Ho some 6 *li* beyond the pass, passing through a flat-bottomed basin surrounded by precipitous crags which reminded one of an extinct volcano. The road from the pass was perfectly black, or rather the snow which was trodden into it, and on examination we found that we were in some places walking over nearly pure coal. The natives say that the whole mountain is made of coal, and they naturally burn nothing else. They only scratch it up from the surface, and it has the peculiar odour attaching to surface coal, but what we saw burning in the inn was excellent. It was made into balls mixed with mud in the usual way, the balls built into a pyramid on the hearth, and when once set going they will remain red-hot all day and night without being removed. The inn was miserable, we had to pig it out with the coolies and landlord until bed time, and had great difficulty in getting them to clear out of the kitchen then. We slept in the latter, G—— on the mud floor. Distance covered about 50 *li*, very hard going.

These salt coolies were fine hard-looking fellows, and might from their appearance have been inclined to levy some blackmail on us had we not been such a large gang. At the same time, they all wore that sort of hopeless animal expression which is so noticeable in that class of men, and which always produces in one a painful impression. Their career had, in the case of most of them, I imagine, been confined to the mountain roads where we found them, and although they had probably never seen a foreigner before, their stolid expression betrayed not the slightest interest in ourselves or our business. As a rule, we encountered very few travellers on the road, and of those we met, carriers of salt, opium, varnish, vegetable wax, and timber were the most frequent. The three last are, of course, products of the country, and the varnish tree especially is seen everywhere in the neighbourhood of cottages, scored on the bark in a peculiar way that reminds one of the "crimping" of a fish. It is a valuable product, and the tree soon gets exhausted from the demands that are made upon it. The varnish tree attains a height at most of about 20 feet, and in the leafless condition in which we saw it reminded one, in its shape and in the texture of its bark, of the common ash. It is tapped of its varnish by the transverse incisions in its bark which I have just mentioned. The salt and opium are both from Ssu-ch'üan, and bound for Ichang and Hankow or the intermediate places. They are brought over these lonely mountain routes simply to avoid the Likin stations which have to be encountered on the waterway between Chungking and Ichang, and it is a significant fact in connection with the Likin system on the Upper Yangtze that it should pay a man better to bring his opium thirty-five days' journey over the mountains on the backs of porters than to put it on board a boat that will slip down to Ichang in little more than a week.

The timber that is carried down from the mountains is all small, in logs and planks, carried on a wooden frame something like an artist's easel, the upper end curving over the carrier's head, and with a ledge at the bottom on which the logs rest·

The country seems to produce no timber of very large size, though much of the forest, judging from its density, the size of the creepers, and the undisturbed state of the decaying timber, must be practically untouched.

The people are hardy and enduring, but are poorly nourished and housed, and incorrigibly lazy. They live almost entirely on maize meal of a poor quality grown in patches on the slopes of the mountains, and only produce enough for their own consumption. Rice is only procurable occasionally, of a red colour, and is expensive. It is grown in the bottoms of the lower valleys where there are facilities for irrigation. We carried all our supplies with us and the difficulty of renewing them, of finding accommodation for ourselves and our coolies, and of carrying money caused constant anxiety and delay. On one occasion we found our exchequer reduced to a few hundred cash, and were forced to wait five days while our men went a distance of 120 *li* to the nearest market, making a return journey of 240 *li* or 80 miles, to change Tls. 15 of silver into copper cash and obtain a goat and a supply of flour. Silver is of no more use than English gold except in a market town. The distances also between the inns were sometimes as much as 40 or 50 *li*, a long day's journey over difficult country. We had to find an inn of considerable size to hold all our party, which numbered some twenty-five persons in all, and bedding had to be found for our porters who, of course, had only the miserable clothes they stood in. Prices were moderate enough. A bowl of maize porridge cost 5 cash, a bowl of soup, with bean-curd and garlic floating about in it, 7 cash, eggs 3 cash each, a night's lodging, including the share of a straw mattress, on the ground, and an enormous quilt, 4 cash. Thus a native could live well for 40 cash a day, and our coolies must have saved, as we had to pay them 210 cash a day a piece, they finding themselves. Our coolies were nearly all Christians, supplied to us by the Mission at Tan Tzu Shan, and, while there were many little points of difference which separated them from their heathen brethren and produced on one a good impression, many of them were lazy and grasping, like some Christians in other classes of society. They seemed, however, happy, contented, kind to one another, and fairly intelligent. Opium smoking and gambling were both strictly forbidden by their rules, and during the seven weeks we were in daily and hourly intercourse with them we never detected either.

We received such kind assistance from the Franciscan Missions who have charge of that part of Hupei and Hunan, besides Shansi and Shang-hsi in the North, and were brought into such frequent contact with their flock that a few words of what we saw of these missions and their work are necessary to a complete sketch of our journey. We stayed on two occasions at the Mission Station of Tan-tzu-shan, in charge of Father B——, whose genuine kindness and hospitality nothing could exceed. Father B—— is a German by birth, was a student at Bonn University and an officer in the German Artillery before he turned Franciscan, and his solitary and devoted life amongst ignorant Chinese mountaineers has not dimmed one whit his interest in the affairs of the day, which he keeps up by reading the newspaper, his perfect polish of manner, or his keen appreciation of a joke. He is in charge of about 800 Christians, most of them of old families and scattered over a large area among the mountains. They are nearly all poor, only a few possessing real and personal property amounting to Tls.1,000 or Tls.2,000, and these are looked upon as people of means and position. All the people round, heathens included, appear to have the greatest respect and affection for the Father, and all alike would greet him with a civil word or a Chinese obeisance as he passed them on the road. At mass on Sundays there would be a congregation on a fine day of 400 to 500 people, some of them coming a distance of 30 *li*, and occasionally a few pagans, attracted by curiosity, would also look in. The chapel was far too small to hold them, and the little courtyard was also filled to overflowing with a kneeling and devout congregation. When we were there the ground was covered with a good foot of snow, and there was yet a congregation of nearly 100 people, many of them old women, for whom it must have been a formidable undertaking to toddle through the snow on their small feet. There is not much superfluous luxury about the life of a Franciscan missionary; he is vowed to poverty, and the circumstances in which he finds himself are certainly conducive to its practice. His house is that of a well-to-do peasant of those parts, which is not high architectural praise, and his food is Chinese.

The other Mission Station we visited was at Szu-ku-shan, the wildest and most desolate place I have ever found myself landed in. The house was also a solitary farm-house on a plateau of mountains some 7,500 feet high. The missionary was a Chinese priest who had been educated in the College at Naples, spoke French and Italian fluently, and was in charge of a scattered parish of some 400 Christians.

It naturally occurs to one to enquire the reason of the existence of these large communities of Christians in the wildest heart of the mountains. Most of their families have been Christians for some generations, and I was told that they are descendants of refugees from the persecutions that took place in the Hukuang Provinces toward the end of the last century, when many natives and Europeans lost their lives. In these mountain fastnesses both priests and people were safe from persecution, and the nucleus formed by a handful of refugees would be gradually augmented by additions from outside. At Tan-tzu-shan, for instance, I found several natives both of Hunan and Sechuan who were comparatively new arrivals, and had been driven to come thither by pressure of hard times and the unpopularity of their religion in their old home. Here they find a congenial soil, metaphorically if not literally, they have the sympathy and support of their co-religionists, and for almost the trouble of clearing the ground they can obtain half the side of a hill with timber and materials for building their cabin, and a patch or two of ground of sufficiently gentle gradient for cultivating a crop of maize. It might be interesting to pursue this subject further, and endeavour to ascertain to what extent religious persecutions in various parts of the Empire have indirectly contributed to colonizing what would otherwise be deserts inhabited by a few banditti and hunters.

I wish it were in my power to convey by description a picture of the scenery we sometimes met with, but words are a poor medium in which to express the grandeur and variety of those mighty forested mountains and gorges. Masses of mountains there were, piled one above another and culminating in scarped and snow covered ridges in the distance. Deep rocky gorges choked with vegetation and fallen masses of rock, with springs and streams of water trickling and rushing down at every turn. Precipitous serrated ridges and pinnacles, absolutely inaccessible except for goats and the most experienced climbers, their summits crowned with a dark mass of what can only be described as "savage" looking forest. Occasionally the mountains would fall away somewhat, and we were delighted to find ourselves in softer scenery that reminded one of Miyanoshita and Hakkone, and the valleys of which in the summer, with rhododendrons in their glory and the forest in full leaf, must be perfect bits of paradise. Water we found everywhere in springs, cascades, and rivulets, which all appeared ultimately to find their way into the Chʻang-yang river, a stream of considerable size which we crossed at several points of our journey, and which reminded one of a Scotch salmon stream tumbling over a rocky pebbly bottom and as clear as crystal. It joins the muddy Yangtze 30 miles below Ichang, and is navigable for nearly 100 miles up its course by boats carrying 1,000 piculs.

I will not trouble you more with generalities, but in order to fill in the detail of this imperfect picture, which professes to be no more than a sketch, I cannot do better than read you such extracts from my diary as appear likely to be of more general interest.

We started from Ichang on the 19th January, and dropped down the Yangtze by boat as far as I-tu-hsien, thirty miles below Ichang. From here we struck inland in a S.W. direction for the mission station of Tan-tzu-shan, which we reached on the evening of the 21st. The country was rough and wild, but presented no special points of interest. At Tan-tzu-shan we obtained information as to our further route, and as we found that it would be necessary to carry everything with us, we sent into Ichang for further supplies, and decided to pass the week pending their arrival in making an excursion to a mass of mountains called the Pa-shan, to the N.W. We started on the 26th in deep snow, with eleven porters. Constantly descending, we found ourselves the following night at Tu-tsung-wan, formerly a place of some importance owing to transit trade in salt, now a straggling village, but with some remarkably good and solid houses and large shops. The people were very friendly, and we were surprised to come across a Cantonese, agent for a large European firm in Shanghai, who comes up here yearly to buy tea for them. He could speak a few words of English, and was delighted to find Europeans to talk to and show off his accomplishments before his neighbours, amongst whom, indeed, he was almost as much a stranger as ourselves. He gave us a pressing invitation to spend the night with him in his comfortable house, of which we were glad enough to avail ourselves.

On Wednesday, 29th January, we started at 8 a.m., crossing the Ch'ang-yang river by ferry, and following its course up stream. The scenery was lovely, the river clear and rapid over a rocky bed of limestone, steep hills on either side, wooded and rising to a height of 1,000 feet, and the view up the valley, backed by the great mass of the Pa-shan mountain covered with fresh snow, its precipices and rifts showing up in the bright sunshine, and reminding one of Alpine scenery in miniature. We passed the villages of Ya-tzu-k'ou and Marlin, where coal is worked. Apparently it exists in considerable quantities, and, if this is so, a more favourable situation for transport down the Ch'ang-yang river and Yangtze could hardly be selected, as it could be shovelled into cargo boats almost at the pit's mouth. We reached Pa-shan about 5 p.m. It hardly deserved the name of a village, consisting of a few scattered houses at the entrance to a grand gorge of the Ch'ang-yang river, which flows some four miles between sheer precipices of limestone 500 feet in height. We had a letter of introduction from a friendly shopkeeper in Tu-tung-wan to the chief man here, who had a fairly large house, but we met with a very cold reception at first, and were only admitted on sufferance. The old man was evidently anti-foreign in his ideas, as he asked me some searching questions about foreign trade, and whether it was not true that foreigners were drawing all the silver out of China, a startling question coming spontaneously from such a quarter, and significant as indicating one of the true causes perhaps of the anti-foreign feeling in China. I set his mind at rest on this point as well as I could, and relations subsequently warmed, so much so that at the end of our stay he asked us to stop some days longer, and offered to find us dogs, beaters, and anything we wanted.

On Thursday, 30th January, we started with three men over the hills to the N.W. on the left bank of the river. Had a tremendous scramble down the precipices overhanging the gorge. G. nearly got stuck altogether, but managed to crawl up to the top again. The men put up a Shan-yang (wild goat), but we saw nothing. We worked our way home four miles along the face of the precipices on the left bank of the river. The scenery was grand in the extreme, but the road, or rather the track, the worst I have ever had to face, and more or less giddy work. At one place it passed through a fine gallery blasted out of the solid rock. We got home dead beat.

The price of coal at Pa-shan is about 170 cash per picul, and apparently of good quality.

We spent two more days at Pa-shan, during which we beat the country for game in various directions, with very little result, after which we retraced our steps to Tan-tzu-shan, arriving there on the 3rd of February.

Father B. would not hear of our leaving again for several days, so we employed our time in collecting a new gang of porters and laying in a fresh stock of provisions. Finally, on Monday the 10th, the snow, which had been most persistent, stopped, and we succeeded in making a start, amidst a fusillade of crackers and bombs, and with a party numbering with ourselves and our two servants 26 in all, in the direction of Ch'ang-lo-hsien S.W. from Tan-tzu-shan. On Thursday, 13th February, the road, which had so far been at a comparatively low level, began to ascend, the country became more wooded, and at 4-30 p.m. we sighted the walls of Ch'ang-lo-hsien. The town is most picturesque, the walls descending from the mountains on either side, and the gate being at the bottom of the angle so formed, the whole picture backed by enormous snow-covered mountains. On entering the gate one finds oneself on the top of almost a precipice from which one looks down on the town in the valley below, a clear, and rapid stream running through it, the houses white and clean-looking, and the colouring enlivened by the red of a smart looking Yamên and temple. The people were curious, but very civil. We slept in an inn on the other side of the town, on the banks of the river, which was beautifully clear, and brawled and rushed over rocks between high and densely wooded hills like a first-class Scotch salmon stream.

On Friday, the 14th February, we followed the course of the stream up a magnificent gorge, with precipitous wooded mountains on each side, and cliffs and crags overhanging. Not far from Ch'ang-lo-hsien we passed the mouth of a large cave, out of which flows a stream of considerable size and depth, issuing apparently from the bowels of the earth, and mingling its waters immediately with the Ch'ang-lo river. On the face of the rock, at the entrance to the cave, there is cut a conspicuous inscription which I had not time to examine or copy, but I was told that it records the history of two dragons—a large one and a small one—who resided in the cave, and were the terror of the country. They were eventually slain by a man named "Wang," who received for his job the thanks of the officials and Tls. 10,000 from the Provincial Treasury. He still lives in the neighbourhood, at the green old age of ninety. The story was related to me so seriously and circumstantially that I can only record it as I received it, and without comment, the more so as a sceptical remark I ventured to throw out as to the existence of dragons caused me to be looked upon as an ignorant fool.

After leaving the gorge the road became very trying, steep gradients leading up to a pass called Sha-tzu-ya, about 6,000 feet above sea-level, where we were in a dense mist. The last part of our road was lovely, but dreadful going. We missed our road once, and the porters were completely played out. We eventually reached Ho-mao-tung, where there was a solitary inn, accommodation fair, but next to nothing to eat. We were all of us so "baked" that we made up our mind to rest a few days here. The scenery was very grand and savage, the hills like the side of a house, and their ridges covered with dark-looking forest, quite inaccessible in places. The country to the N.E. however was easier, and loafing over the hills by ourselves we saw numerous traces of pig, and the trunks of the trees in some places scored with tusk marks, also a native trap. We subsequently arranged a drive, and several pigs were put up, but owing to the mismanagement of our beaters we saw nothing until late in the afternoon, when we had a shot at a large boar, who however got away from us. It was here also that we saw the golden pheasants, two within easy shot, but with rifles in our hands we had to content ourselves with admiring them at a distance. This country certainly held more game than any we had previously seen, and was fairly practicable. We had already, however, been delayed there longer than we had anticipatod through heavy rain and other causes, and as funds were running short we had to push on. We reached our destination, the Mission Station at Szu-ku-shan, on the 21st February, after some hard travelling through lovely wooded scenery. The Mission consists of a lonely farm-house on the top of a high plateau of mountains, enveloped in almost continual mist and bitterly cold. We only saw the sun very occasionally during our stay there, and sometimes could not see a distance of fifty yards. The country is very wild, and the hills are covered with virgin forest, in which great thick creepers like ropes, the holly-leaved oak, rhododendrons, and a sort of birch with delicate bark peeling off like satin and of a rich chocolate colour are conspicuous. We took advantage of a few breaks in the weather to explore the country for game, with the usual encouraging result, and were glad when the return of the men we had sent for cash and supplies enabled us to take the road again.

Our original intention was to have pushed on to Patung on the Yangtze, but after careful enquiry we concluded that we had already passed through the pick of the country, of which the route in Patung would be more or less a repetition, and the result as regards sport had been so discouraging that we determined to strike across to the N.E. direct for Ichang. We left the Mission on the 28th February, with a guide, for Ichang, in a bitterly cold wind and snow. For the first part of our route we travelled in dense fog, and could not see 100 yards in front of us. The road then began to descend rapidly, and we found ourselves below the clouds, and in a fairly cultivated country. Late in the afternoon, on the clouds lifting, we obtained a view of the Szu-ku-shan plateau, where we had been spending the last week, that defies description. It is literally a table land, four square, the corners marked by four great peaks, and its gorges and precipices stood out in magnificent relief amongst the snows. Looking back on this panorama of wild country, it seemed like an enchanted land standing isolated among the clouds, and, even knowing it as we did, aroused in us anew all the curious feelings suggested by an unknown and mysterious land. One could imagine that it contained anything and everything curious, from dragons to wild men, instead of being the empty wilderness that it is. The last 15 *li* of our route was a steep descent to the valley of the Ch'ang-yang River, here an unnavigable mountain torrent flowing between precipices 1,500 feet high. We found the inn closed on which we had counted for accommodation, and we had to make for the river bank, where there was a ferry communicating with the little village of Szu-pan-ch'i perched up on the face of the precipice opposite. It was quite dark, all hands were tired out, and we shouted ourselves hoarse before the ferry man would condescend to come across the river for us. At last, however, we were all housed in a good inn consisting of one large room combining kitchen and everything else. The proprietor was a sporting-looking fellow with an intelligent soldier-like face on him, and a leopard-skin coat. The people very civil, although they had never seen an European in his own costume before. Musk-deer are found among the cliffs here, and the landlord showed me some grains of musk carefully done up in paper like a seidlitz powder, and gave me a dissertation on its wonderful medicinal properties. It sells here for about 400 cash a candareen, or say £6 sterling an ounce.

Continually descending after leaving Szu-panch'i we found ourselves on the afternoon of the 5th March on the main road from Ssuchuan, the first time during our journey that we struck the high road. The traffic, especially of opium, was considerable, and the road a treat after what we had been through. We slept at Ho-chia-p'ing in a first-rate and very large inn. The climate was distinctly warmer.

On the 6th March we made an early start, and following the high road, which was lively with traffic, descended into the narrow gorge of a mountain stream. The road at one point passed for one hundred yards or so under a covered way, one side open to the stream and supported by substantial wooden pillars, the other consisting of extremely well-to-do shops, reminding one strongly of the "Rows" at Chester. The whole block, isolated, and, so to speak, *à propos* of nothing, for there were no other houses in sight, was well-built, and the effect amongst the surrounding scenery was very pretty. The *raison d'être* of these shops was evidently the transit trade in Szu-ch'üan produce, of which they got their pick before it reached the Ichang market, selling their European goods in exchange.

Just below this the stream is crossed by a handsome one-arched stone bridge, quite new, and then the valley opens out somewhat into pretty river scenery of wooded hills, rocks, rapids, bamboos, and grass, with frequent villages.

The 7th March was our last day into Ichang, which we reached in the afternoon, crossing the Yangtze just above the city, and we soon forgot the hardships of our journey in a warm welcome from our European friends, a clean change, newspapers, and luxury.

BOOK NOTICES.

Aperçu des Travaux Géographiques en Russie. Par le Baron Nikolas Kaulbars. St. Petersburg, 1889. 8vo. 292pp.

The work of the Russians in the geographical service is so little known that the review of Baron Kaulbars is very welcome. In Central Asia, about the Aral Sea, the Kirghis Steppes and Turkistan, Turkomania, the Amu Daria, China, Khiva, Bokhara, and Afghanistan, in Persia, Asia Minor, Bulgaria, Montenegro, in Egypt, Arabia, Norway, America, Japan, and Australia, the Russians, since the time of "Ivan the Terrible," have been engaged in surveying and map-making. War and peace have alike rendered help to the work done by Russia, and this comprehensive review brings to the mind a conviction of the great scientific work which has been quietly, in the midst of great conflict, been always going on. The paper was read at the International Congress of Geography at Paris, and is now printed in full. It is an admirable summary, and will be a surprise to those who have not had the pleasure of reading Mr. Delmar Morgan's papers on Russian work.

The Minerva Library. Ward, Lock and Co. Maps and illustrations. 2s. each. European Travels. Beckford.—Travels on the Amazon. Wallace.—South Africa and Vacation Town. Galton.—Bible in Spain, and Adventures. Borrow.—Voyage Round the World. Darwin.—Coral Reefs and Volcanic Islands. Darwin.—Travels in North and Central Africa. Barth.—Travels in Timbuktu and the Soudan. Barth.—Modern Egyptians. Lane.

These reprints of famous travel books are edited by Mr. G. E. Bettany, M.A., and, where needful, chapters or notes are added in completion or elucidation of the text. The books are handy in size and well done. We hope to see the series continued, and are glad to add them to the Library.

TRANSLATION OF MEMORIAL FROM LI HUNG CHANG TO THE THRONE, ON THE FLOODS IN CHIHLI.

4th August, 1890.

A memorial from Li Hung Chang, representing that an abnormal quantity of rain having fallen in Tienstin and its neighbourhood, severe floods have occurred, and that steps are now being taken to raise subscriptions and divert a sum of money from the public funds to relieve the pressing necessities of the people.

In the Province of Chihli, in the latter part of the summer, the rains arrived later than usual. Then several downpours of rain occurred, the land was soaked to repletion, and every hope of a good harvest was entertained. From the 21st day of the 5th month a season of incessant rain commenced, and little by little the water rose. The low-lying plains became flooded, and the embankments of all the rivers began to develop weak spots. The memorialist issued repeated instructions that some method should be adopted to relieve the pressure of accumulated flood water and that the most earnest efforts should be directed to arrest the destruction of the river embankments.

It happened, however, that, contrary to all calculation, there was, from the 29th day of the 5th month until the 6th of the 6th month, an incessant storm of strong wind and heavy rain. The mountain torrents overflowed and rushed into the levels below as if falling off a roof. All the rivers became flooded, and topped their embankments with terrific waves. The two banks of the Yung-ting river, the Peiho and Grand Canal, the Ta Ch'ing river, and the "thousand *li* embankment," in the "Jen-Ch'iu" district were broken through in numerous places. On each side for hundreds of *li* there is now one unbroken sea. In the plains there is water to the depth of twenty feet or more, and the homesteads and fields of the peasantry are all usurped by the powers of water. The loss of life by drowning to human beings and cattle is enormous, and wherever the eye rests the autumn crops have all been carried away by the floods. Such a calamity has been unknown for scores of years.

Tientsin forms the outlet for nine rivers, and the level of the country is naturally low. Add to this the effect of an east wind in raising a sea, and of a tide in forcing back the water, the difficulty of draining the flooded districts will be apparent. The military camps and the various arsenals outside the city are all hemmed in by a vast flood; official Yamêns and private houses have fallen down in numbers. The post roads are all interrupted, the different telegraph lines have in many places been washed away, and communication of every description is at a standstill. The condition of affairs in the various official districts to the south-west of the Provincial Capital (Pao-ting Fu) the memorialist has as yet no means of ascertaining, so that the present description applies only to the immediate neighbourhood of Tientsin. The cottages of the peasantry are in most cases constructed of mud, and the action of long-continued rain reduces them to a sodden and extremely unsafe condition. When once they are reached by the waves of the flood, walls and buildings collapse in helpless ruin. The poor peasantry either take refuge in the trees and shout for boats to save them, or cast around in vain for a dry spot to which to move their families; distracted by the suddenness of their calamity, afflicted with suffering of every kind, the mind can scarcely bear to contemplate the painfulness of their condition.

The autumn season is now close upon us, and should the clouds roll away and blue skies appear, it would still be possible, so soon as the floods had sufficiently fallen, to sow at least buckwheat and such grains in place of the crops destroyed. At the present moment, however, the clouds are as thick as ever, and the atmosphere is still charged with rain. Should the incessant downpour continue it will be increasingly difficult to decide what measures to take. The starving peasantry, unable to make a living, are coming to Tientsin in search of food, and it is necessary that immediate steps should be taken to relieve the pressure of distress by temporarily assisting the sufferers at our doors. The memorialist, together with the other provincial officials, are using every effort to encourage subscriptions, and are earnestly urging the gentry and merchants to collect funds for distribution in charity, to increase the number of refuges, and to distribute rations of bread and congee in order to preserve the lives of the sufferers. The fact is, however, that the continually recurring years of flood and famine have already exhausted the springs of charity, and the Province of Chihli is besides a country of but limited resources, where it is difficult to command a large sum of money. The provision, however, of the necessary funds cannot be delayed for a moment, and some means must positively be decided upon to collect them. The Provincial Treasurer has already been instructed to provide Tls.30,000, the Salt Treasury, Tls.20,000, the Pao-ting Fu Militia chest, Tls.10,000, and chosen and trustworthy officers have been despatched to those districts which have suffered more severely from the floods, to combine with the local officials in investigating and honestly relieving with money the most pressing distress.

The memorialist has instructed the officials of the various flooded districts to examine and report to him on the amount of damage or distress caused in each, and proposes in due course to collate the reports into a memorial to the throne. He is also awaiting the report of the intendant of the Yung-ting river as to the exact circumstances of the breach there, in order to address a special memorial to the throne impeaching that official.

IMPERIAL RESCRIPT RECEIVED.

Noted. Let the Tls.60,000 be handed at once by the memorialist to his officers, with instructions for its honest and prompt distribution, and let the circumstances of the breach in the Yung-ting river, and the extent of the damage and distress caused in the differeut official districts, be speedily investigated, and embodied in a memorial to the throne.

BOOK NOTICES.

The World's Great Explorers. G. Philip and Son, London. About 300pp., with a large number of maps, illustrations, and indexes. 4s. 6d. each.—Joseph Thomson : Mungo Park. F. N. N. Guillemard : Ferdinand Magellan.

The volumes of this series are being added to. The books are very well done and are of very great value. They are just the books young people will devour, and old ones might do a great deal worse than spend some time over them. For prizes and for school libraries there can be nothing more admirable. The maps with Park are interesting and valuable, and if space permitted long extracts would be appreciated. We are glad to find them added to the Library.

PROCEEDINGS OF THE SOCIETY.

OCTOBER 1st TO DECEMBER 31st, 1890.

HUNDRED AND THIRTY-SIXTH MEETING

Of the Society, held in the Memorial Hall, Wednesday, October 1st, 1890, at 7-30 p.m. The Rev. S. A. **Steinthal** in the chair.

Miss H. E. **Colenso** addressed the members on "Zululand" (see page 157). The address was illustrated with photographs and large maps, and was listened to with very great attention.

Mr. S. **Ogden**, J.P., moved a very hearty vote of thanks to Miss Colenso for her paper, which was seconded by Mr. J. **Dilworth Harrison**, supported by the **Secretary**, and carried with acclamation. Miss **Colenso** responded, and a vote of thanks to the Chairman closed the meeting.

HUNDRED AND THIRTY-SEVENTH MEETING

Of the Society, held in the Library, Wednesday, October 8, at 7-30 p.m. Mr. **Wm. Aldred**, F.C.A., in the chair.

A large number of presentations were announced and the election of the following members reported:—

Ordinary: Rev. A. Maclaren, D.D., Rev. John Quine; Messrs. W. A. Child, Neville Clegg, J. A. Morris, J. A. Walker, and Wm. Williamson.

Associate: Mr. J. W. Watkinson.

The following papers were read: "Nile Discovery," by Mr. J. Howard Reed (see page 345); "Notes on Armenia," by Mr. J. Theodore Bent (see page 220); "Teaching of Geography in Russian Schools," by Dr. H. R. Mill, of Heriot College (see page 239); "New Trade Routes in Persia," by Mr. H. F. B. Lynch (see page 223); Report of the Delegate to British Association (see page 261); "The Atlantides" by Professor Borsari; "Borate of Lime Deposits," by Mr. A. Rowbottom; "Note on Heligoland" (see page 154). Correspondence was read from His Excellency Governor Moloney, of Lagos, and Mr. R. E. Dennett of the Congo.

Several questions were replied to, and some discussion ensued on the various papers. Votes of thanks, moved by Mr. T. **Gregory**, seconded by Mr. C. **Wadsworth**, closed the meeting.

HUNDRED AND THIRTY-EIGHTH MEETING,

Held in the Mayor's Parlour, Rochdale Town Hall, on Thursday, October 16, 1890, at 3 p.m., on the invitation of His **Worship** the **Mayor**, who presided.

The Rev. S. A. Steinthal, Messrs. Irlam, Phillips, Snaddon, and the Secretary attended the meeting as a deputation from the Society, and in their addresses referred to the history and work of the Society, and the great importance to a commercial community of an efficient Society of this kind.

Thanks were given to His Worship the Mayor, and some members were added to the Society.

HUNDRED AND THIRTY-NINTH MEETING

Of the Society, in the Memorial Hall, Wednesday, Nov. 5th, 1890, at 7-30 p.m. Mr. Councillor F. Smallman in the chair.

Mr. Gustav Jacoby addressed the members on "British Trade with Algeria, Tunis, and the Sahara" (see page 269). The address was illustrated by a large map of North Africa prepared by the Victorians.

Mr. F. Zimmern addressed the members on "A Month in the district of St. Gall, Switzerland." A cow-bell, some maps, photographs, and some curious prints were exhibited to illustrate the address.

Capt. Marley sent for the inspection of the members a collection of photographs of India, New Zealand, &c.

The Secretary gave a short description of a journey across Sweden through the Gota Canal, illustrated by maps, photographs, models, dresses, &c.

Letters were read from the Rev. W. C. Porter, Newala (see page 287), describing the condition of a part of East Africa and the effect of the German occupation; Mr. R. E. Dennett on Congo matters; the Berne Geographical Society in reference to the Congress next August, and the "Camille Douls" Committee for the erection of a statue to his memory.

Votes of thanks to the readers of the papers and to the Chairman were very heartily given and responded to, and the meeting closed.

HUNDRED AND FORTIETH MEETING

Of the Society, held in the Mayor's Parlour, Town Hall, Manchester, by the permission of His Worship the Mayor of Manchester, Friday, November 21st, 1890, at 3 p.m. The meeting was called to hear addresses and to confer on the present condition of Nyasaland (see page 287). The Right Rev. the Lord Bishop of Manchester in the chair.

Letters from Consul H. H. Johnston and Rev. W. C. Porter were read.

The Venerable Archdeacon Maples, from Likoma, the Rev. D. Kerr Cross, M.B., G.M. of the Free Church of Scotland Mission on Nyasa, and Mr. J. W. Moir, of the African Lakes Company, addressed the meeting. Large maps of Nyasaland were hung to illustrate the address.

Mr. J. A. Beith, J.P., moved and Mr. S. L. Keymer seconded a very hearty vote of thanks to the gentlemen who had addressed them on the question with so much interest and ability. The resolution was carried and responded to. A very hearty vote of thanks was given to the Mayor for the use of the Parlour, and to his Lordship, the Bishop, for presiding. The Bishop responded.

HUNDRED AND FORTY-FIRST MEETING

Of the Society, held in the Memorial Hall, on Friday, November 21st, 1890, at 7-30 p.m.; the Rev. S. A. Steinthal and members of the Council received the members, and there was a large attendance.

A number of maps, atlases, books, and curiosities, which had been presented to or purchased by the Society, were exhibited. A number of photographic views of Nyasaland were shown in the lantern and were explained by the Venerable Archdeacon Maples. The Rev. Dr. Cross and Mr. J. W. Moir also addressed the meeting.

Music and refreshments were provided and the members had an opportunity of interviewing these distinguished visitors.

Very hearty thanks were given to the visitors for their addresses, to the Victorians for the music, and to the Chairman. The CHAIRMAN responded.

HUNDRED AND FORTY-SECOND MEETING

Of the Society, held in the Large Hall of the Schiller-Anstalt, Nelson Street, Monday, November 24th, 1890, at 7-30 p.m. Mr. F. ZIMMERN in the chair.

Mr. M. STIRRUP, F.G.S., addressed the members on "Water Sculpture of the Earth," (see page 364), illustrating the address with large maps of the Cevennes district and by lantern views. These views were nearly all new, and had not been previously exhibited here.

The thanks of the members were heartily given, on the motion of the Rev. S. A. STEINTHAL, seconded by Mr. HERMANN WOOLLEY.

Votes of thanks to the Committee of the Schiller for the use of the room, and to the Chairman, having been replied to, the meeting closed.

HUNDRED AND FORTY-THIRD MEETING

Of the Society, held in the Memorial Hall, Wednesday, December 3rd, 1890, at 7-30 p.m. The Rev. T. CORBISHLEY in the chair.

The Rev. L. C. CASARTELLI, M.A., Ph.D., had prepared a "Brief Note on Manchester Rainfall" (see page 77), which was illustrated by a large map prepared by the Victorians.

The SECRETARY read a short note on the work of Mr. Clement Wragge, in organising the Government Meteorological Department of Queensland, and exhibited a large number of specimens of his work. (See page 182.)

Mr. I. W. THOMPSON addressed the members on "Los Angeles and Southern California." (See page 297.) Some Californian views and pamphlets were exhibited. A large number of questions were asked Mr. Thompson and replied to.

Thanks were duly and heartily given to the lecturers and to the chairman, which being responded to closed a profitable and valuable meeting.

HUNDRED AND FORTY-FOURTH MEETING

Of the Society, held at the Pendleton Town Hall (by permission of the Pendleton Committee of the Salford Corporation), on Wednesday, December 17th, 1890, at 7-30 p.m.

His Worship the MAYOR OF SALFORD, a vice-president of the Society, received the members, and at eight o'clock introduced Mr. E. W. MELLOR, of Bury, who addressed the Society on "Normandy" (see page 304), illustrating his address with a fine series of photographs taken by himself and shown in his lantern, which was very powerful, and the pictures were very remarkable for their clearness and beauty.

The MAYOR OF ROCHDALE moved, Mr. J. B. REYNER, J.P., Stalybridge, seconded, and Councillor STEPHENS supported a very hearty vote of thanks to Mr. Mellor for his address. The motion was carried with applause.

The thanks of the meeting were very heartily given to the Pendleton Committee of the Corporation for the use of the rooms, to His Worship the Mayor for presiding, and to the committee of Pendleton members who had arranged the details of the reception. Music and refreshments were provided, and one of the most interesting meetings closed at a late hour.

ONE HUNDRED AND FORTY-FIFTH MEETING

Of the Society, held in the Library, Friday, December 19th, 1890, at 7-30 p.m., Rev. L. C. CASARTELLI, M.A., Ph.D., in the chair.

The minutes of the following meetings were read and approved: October 8th (137), 16th (138), November 5th (139), 21st (140-141), 24th (142), December 3rd (143), Dec. 17th (144). The presentations to the Society's Library and the election of the following members for 1891 were announced:—

ORDINARY: Messrs. Samuel Barlow, J.P., G. G. Campion, Cephas Duckworth, Anyon Duxbury, Hugh Fleming, Stewart Garnett, J.P., Isaac Gleave, J. Hart Gordon, Alderman J. R. Heape, F. J. Jackson, W. Jackson (in lieu of Associate), A. E. Lejeune, James T. Lightwood, James Makin, H. H. Mellalieu, J.P., R. C. Phillips, J. B. Reyner, J.P., R. W. Shaw, Thomas Stansfield, Henry Swindells, E. Timperlake.

ASSOCIATES: Messrs. J. McAdam, Harold Berry, S. Cohen, J. W. Hurrell, R. Woods.

Correspondence was read from the following: H.E. Governor Moloney, Lagos; Mr. R. E. Dennett, Banana; Mr. Theodore Bent, Mashonaland.

The CHAIRMAN read a paper by Mr. E. Guy Hillier, on "A Mountain District of Central China" (see page 370), the address being illustrated with a map and a large collection of beautiful photographs.

The Rev. L. C. CASARTELLI also read a translation of "Memorial from Li Hung Chang to the Throne, on the Floods in Chihli." (See page 379.)

A short note by the Rev. F. GALPIN on His Excellency Li Hung Chang was read. (See page 35.)

A large and interesting collection of photographs from Corea, by Mr. Walter C. HILLIER (H.M. Consul-General at Seoul), was exhibited.

A report of the delegate to the meeting of the Aborigines' Protection Society was read by Mr. R. C. PHILLIPS.

Votes of thanks closed a most interesting meeting.

HUNDRED AND FORTY-SIXTH MEETING

Of the Society, at the Cotton Waste Exchange, Saturday, December 27th, 1890, at 6 p.m.

The Victorians invited the children of the members to a meeting at which geographical lantern exhibitions and other diversions were given. About 200 children took part in the meeting, which was thoroughly enjoyed.

Thanks were heartily given to all those who had taken part in the preparation and carrying out of the proceedings, and the meeting closed about ten o'clock.

THE REPORT OF THE SECRETARY OF THE SOCIETY TO THE COUNCIL FOR THE YEAR 1890.

My Lords, Ladies, and Gentlemen,—It affords me much pleasure to report to you the continued prosperity of the Society for the year 1890, both in the accession of members and in the increased usefulness of the Society.

The debt which has hampered the Society for several years is now so nearly cleared off that we may shortly hope to see it extinguished altogether.

If our membership could be so strengthened as to enable us to have decent premises and to strengthen the staff of the office, good as the work we have done may have been, we could do very much better, and could begin to realise the hope of the founders of the Society.

We have to thank a large number of ladies and gentlemen for the admirable addresses they have given to us and have allowed us to reproduce.

Addresses in Geography, History, Zoology, Botany, Biology, Anthropology, Commercial Education in its relation to Geography, Travels, Local Geography, and upon Sciences related to Geography have been delivered.

With great generosity these addresses have been given to us, and of the fifty (or thereabouts) there are few which do not reach a very high standard of excellence for their scientific, commercial, and literary value.

The following list comprises those only which have been printed in our Journal, but, in addition, we have had at the Library meetings many oral communications of great value which we are not able to reproduce.

EDUCATIONAL.

On the Necessity of Thorough Teaching in General Geography as a Preliminary to the Teaching of Commercial Geography. Mr. H. J. Mackinder, M.A.

On the Teaching of Geography in Russia. Dr. H. R. Mill, D.Sc., F.R.S.E.

The Report to the Council on Geographical Education, with proposals for prizes and certificates for an examination in the Geography of Lancashire and Cheshire by the children of primary schools of the Seventh Standard and upwards.

GENERAL.

On the Present State of the Ordnance Survey, and the paramount necessity of a thorough revision. Mr. H. T. Crook, C.E.

Report of Delegate to the British Association Meeting at Leeds in 1890.

Earth Sculpture by Water. Map. Mr. M. Stirrup, F.G.S.

Caucasian Photographs.

COMMERCIAL GEOGRAPHY.

The Negotiations of Duke Frederick III. of Holstein-Gottorp with Russia and Persia concerning the scheme for bringing the Persian Trade through Holstein-Gottorp, A.D. 1633-1640.

British Trade with North Africa. Mr. G. Jacoby.

The Trade of Morocco.

LOCAL GEOGRAPHY.

A Preston Ward's Geography, History and State. Councillor Harding.

Description of a Contour Map of Huddersfield and District. Mr. F. D. King.

The Rhins of Galloway: A Note and Comparison. Mr. W. G. Black, F.R.C.S.E., F.R.M.S.

METEOROLOGY.

Notes on the Manchester Rainfall during the twelve years 1878 to 1889. Map. Rev. L. C. Casartelli, M.A., Ph.D.

Queensland Meteorology and Mr. C. Wragge.

BIOGRAPHICAL.

His Excellency Li Hung Chang. Portrait. Rev. F. Galpin.

M. Camille Douls.

Dr. L. Wolf.

EUROPE.

"Unknown France." The Hydrology of the Causses of Languedoc, &c.: A Chapter on Denudation and the Régime of Underground Waters. Map. Mr. Mark Stirrup, F.G.S.

Normandy: History and Geography. Mr. E. W. Mellor.

ASIA.

The Forests of Abkhasia. Map and Illustrations. Mr. Douglas W. Freshfield, Hon. Sec. R.G.S.

On the Opening of the Yangtse-Kiang River to Navigation.

The Sulphur Springs of Formosa. Illustration. Mr. J. Rippon.

Notes on the Armenians in Asia Minor. Mr. J. T. Bent, F.R.G.S.

New Trade Routes into Persia. Mr. H. F. B. Lynch.

Pievtsoff's Expedition in Central Asia

Prince Henry of Orleans and M. Bonvalot's Journey through Central Asia.

AFRICA.

The Fjort: The Manners and Customs of the Native Congo People. Mr. R. E. Dennett.

The Island of San Thomé and the West Coast of Africa. Mr. J. Rippon.

The Transvaal: History, Geography, Minerals, and Progress. Portrait and Map. Mr. W. Y. Campbell.

The Stanley Reception. Speeches of Mr. Stanley in Manchester and of Dr. Parke at Newcastle.

The Lakes of East Central Africa: The Map Development. Maps. Mr. J. H. Reed.

The Mediterranean: Physical and Historical. Map. Lieut.-Col. Sir R. Lambert Playfair, K.C.M.G.

Nyasaland and British Exploration. The Ven. Archdeacon Maples, Rev. Dr. Kerr Cross, Mr. J. M. Moir, and the Lord Bishop of Manchester.

Zululand: Its Geography and History. Map. Miss Colenso.

The Nile: History of Discovery and Cartography. Maps. Mr. J. H. Reed.

The Cameroons Region. Exploration by Dr. Zintgraff.

Mount Ruwenzori (Mountains of the Moon).

NORTH AMERICA.

Stone Monuments in North-Western Iowa and South-Western Minnesota. Mr. T. H. Lewis.

Los Angeles and Southern California. Mr. I. W. Thompson.

SOUTH AMERICA.

On the Opening of the Upper Amazonian Regions as a Field for English Enterprise.

An Expedition to the Upper Amazon.

AUSTRALASIA AND OCEANIA.

Rossel Island: A Cannibal Island. Mr. Basil Thomson.

British New Guinea: Its Geography, and the Manners and Customs of the Natives. Mr. W. D. Pitcairn, F.R.G.S.

Notes of the Recent Development, Explorations, and Commercial Geography of North Borneo. Mr. A. Cook.

Sir W. Macgregor's Ascent of Mount Victoria and Explorations of the Owen Stanley Range. Mr. J. P. Thomson, F.R.S.G.S.

The Island of Kadavu. Mr. J. P. Thomson, F.R.S.G.S.

In addition to these formal papers we have had during the year a large number of communications from China, the Gold Coast, the Congo, South Africa, North Africa, the Red Sea, North America, France, Switzerland, and other places, and the colonies of the Empire, on matters of interest and of commercial importance.

The work of this department of the Society must in time become greatly enlarged, and it will tend to the increase of knowledge and goodwill of those whose duty it may be to conduct it, although a large part of it may not be available for the general use of the Society.

The useful work of the "Victorians," who have addressed many meetings for the Society with great advantage to those who have heard them, is dealt with in the separate report of their Hon. Secretary, Mr. C. W. Grindley.

These young men are laying the Society under a deep debt of obligation by giving unrequited labour. They are enabled to do their work more efficiently in consequence of our excellent lantern and the large collection of slides we have been able to form already, and they have shown their disinterestedness during the season by reducing somewhat the cost of the lantern apparatus.

The exhibition of Geographical appliances itself, open for six weeks, and the masterly addresses given on the subject, and the examination by the Society of the condition of the teaching of Geography in the locality, are now producing the desired result in more efficient Geographical teaching. Besides these more public uses of the Society, the valuable Library, and the increasing number of applications for information and advice from the officials of the Society, is very encouraging.

The increase of the Library is very remarkable. A few additions have been made by purchase—not so many as we ought to have had, if funds would have allowed. But from publishers, private persons not connected with the Society, from corresponding societies and institutions, from foreign governments, and from some departments of Her Majesty's Government, we have gratefully received curiosities, books, maps, atlases, diagrams, pictures, portraits, until our shelves are overloaded, and we have material we cannot use to the utmost profit for the want of proper accommodation.

A large collection of lantern slides has been added to the Library, and we have now a capital lantern, which has been used in the past season with great appreciation. The "Victorians" have done most effective work in the Photographic department. Photographing, making lantern slides, having charge of the lantern, and acting as demonstrators in the meetings of the Society, all has been done so ungrudgingly and continuously that this part of their work merits special approbation.

We should have been glad to find Professors of Geography appointed at Owens College, Liverpool College, and the Yorkshire College. We were very glad to note that evening lectures were to be given at Owens College on Commercial History and Geography, that Commercial Geography is taking its place in the evening schools, at the technical schools, and in the scheme of the Chamber of Commerce. The present and pressing need is for competent teachers of Commercial Geography, and they are difficult to find, and will only be produced slowly. If the teaching is taken up as a mere duty, it will be mere taskwork, and the teaching will fail; but if, in addition to the requisite knowledge, there is sustaining enthusiasm in the teacher, the subject will become of great interest and value both to teacher and pupils. To the missionary of every creed the Society sends help in many ways, to the commercial man it opens up avenues of knowledge in relation to his special subject which he can hardly obtain elsewhere, to the educationist it gives encouragement and tools of considerable value, and to the historian and scientist it is of inestimable value. There is learning for the learned, and for the unlearned there are numerous practical lessons on Home and Foreign Geography which arouse interest, leave happy impressions for the future, and help to make a fuller and more complete life.—I beg to remain, yours respectfully,

ELI SOWERBUTTS, Secretary.

Obituary.

The Society has suffered, during the year, very heavy losses by the death of some of its most important members, some of whom have given a good deal of service to the Society, and all of whom were in hearty accord with its objects. Their places will be difficult to fill again, and it is with great regard to their memory and sympathy for the loss that we record some of their names. They are:—

Mr. Daniel Adamson, J.P.,
Miss Lydia Becker,
Mr. G. B. Blair,
Mr. Thos. Bostock,
Mr. J. W. Edwards,
Mr. F. W. Grafton, J.P.,
Mr. J. F. Hutton, J.P.
Mr. J. Clarkson Johnson,
Mr. Alfred E. Longdon,
The Very Rev. Dean Oakley,
Councillor McFarlane,
and others.

REPORT OF THE "VICTORIANS" TO THE COUNCIL OF THE SOCIETY ON THEIR WORK.

My Lords, Ladies, and Gentlemen,—It is now over four years ago since the "Victorians" were called into being. The purpose set before them was the performance of practical work in Geography; and commencing with a series of thirteen maps for the Jubilee Exhibition they have followed up this purpose with as much zeal as perhaps was practically possible, considering the claims their daily labour made upon them.

Last year the work of lecturing was taken up, on the suggestion and under the leadership of Mr. Sowerbutts, with great vigour, over twenty lectures and addresses being given during a period of seven months.

The following have been delivered: Six for the Working Men's Clubs Association, on "The Stanley Expedition for the Relief of Emin Pasha," illustrated with lantern views; one for the Home Reading Union, on "The Mediterranean: A Study in Comparative Geography," illustrated with a series of maps specially drawn for the lecture; two for the Leigh Literary Society, on "Commercial Geography" and "Across Africa with Stanley," with maps, diagrams, and lantern views; one for the Oldham Corporation, in the Public Free Library, on "Stanley's Latest Expedition," with lantern views; one to the members of the Shaw (Oldham) Literary Institute, on "Polar Exploration," with lantern views; and the remainder for societies in Manchester and neighbourhood, chiefly at the request of our members, on "Stanley's Expeditions," "The Nile and its Heroes," "The Congo," "Polar Exploration," "The Romance of Geography," "South America," "India," and others relating to mission work in the "Dark Continent."

Addresses have also been given to the children of several Sunday Schools, of different denominations, on subjects having a relation to Geography and Missions.

Lantern views, maps, diagrams, and curios have been freely used to give interest to the subjects.

In all places the lectures and addresses have been received with keen appreciation by large and oftentimes crowded audiences.

In addition to this work the "Victorians" have given two lantern entertainments for the Practical and Recreative Evening Classes Association and one for the Adelphi (Salford) Lads' Club; also lantern and musical entertainments to the inmates of the Manchester Workhouse at Crumpsall; to the children of members belonging to the Geographical Society; and to the children of the Deaf and Dumb Schools, Old Trafford.

Several friends gave their valued assistance in the musical part of the entertainments, and to these the "Victorians" tender their warmest thanks.

This slight sketch of the work done during the past winter session (which does not include the ordinary work of preparing maps, making analyses of journals, &c.) shows that this section of the Manchester Geographical Society is trying to do something, not only for the Society itself, but also towards furthering the intellectual life of the community.

Chas. W. Grindley, Hon. Sec. to the "Victorians."

REVENUE ACCOUNT,

January 1st to December 31st, 1890.

Dr.	£	s.	d.	£	s.	d.
To Balance from 1889				4	15	10
,, Members' Subscriptions—						
,, 479 Ordinary	489	16	6			
,, 200 Associate	105	0	0			
,, 1 Society	2	2	0			
				596	18	6
,, Bank Interest				1	3	7
				£602	17	11

Cr.	£	s.	d.	£	s.	d.
By Expenses of Meetings..				160	18	10
,, Journal, April, 1889, to June, 1890				245	18	6
,, Rent, Rates, Taxes, Gas, &c.				50	16	3
,, Books, Maps, Binding, and Shelves for Library				32	5	5
,, Advertising	6	12	7			
,, Sundry Expenses, Coal, Stationery, Cleaning Offices, Postage, Carriage, Telegrams	94	8	7			
				101	1	2
,, Balance as per General Balance Account				11	17	9
				£602	17	11

GENERAL BALANCE ACCOUNT,

December 31st, 1890.

Assets.				£	s.	d.	£	s.	d.
To Arrears of Members' Subscriptions.............							257	5	0
,, Stock of Journals........							52	15	0
,, Lantern Account :—									
Cost				22	7	10			
Less received				2	5	9			
							20	2	1
,, Amounts charged on Account of 1891 :—									
Journal..............				19	15	6			
Library..............				12	12	0			
New Members........				15	0	0			
							47	7	6
,, Cash in hand, Treasurer..				18	10	9			
,, ,, Secretary..				35	16	8			
							54	7	5
,, Balance of Deficiency Account, Jan. 1st				85	7	8			
,, Less Donations ..	6	1	0						
,, Stanley Meeting Surplus..	36	13	9						
,, Balance of Revenue a/c..	11	17	9						
				54	12	6			
							30	15	2
							£462	12	2

Liabilities.	£	s.	d.
By Eleven Life Membership Subscriptions in Reserve....	115	10	0
,, Accounts Sundry owing	347	2	2
	£462	12	2

Audited and found correct,

(Signed) THEODORE GREGORY, F.C.A., } Auditors.
WILLIAM ALDRED, F.C.A.,

June 24th, 1891.

LIST OF JOURNALS, MAPS, ATLASES, &c.,

ACQUIRED BY THE SOCIETY FROM 1885 TO 1890, NOW IN THE LIBRARY,

With an indication of some of the principal papers in the Journals for 1889 and 1890.

⁂ Only the most important articles have been indicated from the Journals of Corresponding Societies. A very large number of smaller articles of great interest will be found on reference to the books themselves.

CORRESPONDING SOCIETIES IN GREAT BRITAIN.

Edinburgh. The Scottish Geographical Magazine. Vols. I., 1885, to VI., 1890 (No. 11, 1890, missing).—1889: (1) History of Telegraphic Communication with India, by Gen. Sir R. M. Smith. District of Chiengmai, Siam, by W. J. Archer. Inland Ice of Greenland, by H. Rink.—(2) The Andamans and Andamanese, by Col. T. Cadell. The Transvaal, by S. P. Ford. The Philippine Islands, by W. A. Taylor.—(3) Islands of Melanesia, by R. H. Codrington. Dr. Livingstone and Lake Bangweolo, by E. G. Ravenstein (map). Earthquake Shocks in Edinburgh District, by R. Richardson (map).—(4) Explorations in the Atlas, by Joseph Thomson.—(5) Letter from H. M. Stanley (map). Samoa, by G. A. Turner (map). The Portuguese in Nyassaland, by J. Batalha-Reis.—(6) South American Rainfall, by W. B. Tripp (map). Scientific Earth Knowledge as an Aid to Commerce, by H. R. Mill.—(6, 9, 11) The Cocos-Keeling Islands, by H. B. Gruppy (map).—(7) Astronomical Observations from Quillimane to North Nyassa by, H. E. O'Neill. Geography of the Caucasus, by V. Dingelstedt. Examination Scheme of R.S.G.S. (map).—(8) Across Greenland, by Dr. F. Nansen (portrait and map). Marine Deposits, by J. Murray (map).—(9) Zambesi Delta, by D. J. Rankin. (10) The East of New Guinea, by Basil Thomson. The Present and Future of Queensland, by C. Lumholtz.—(11) Temperature of Tidal Estuaries of S.E. England, by H. C. Sorby.—(12) South Coast of Western Java, by H. B. Guppy. Island of Kadava, by J. P. Thomson.—1890: (1) Africa: Spheres of Influence, by Gen. Sir L. Pelly. Letter from H. M. Stanley. Kara Sea and Route to North Pole, by Capt. A. Hovgaard.—(2) Evolution of Climate, by Prof. J. Geikie (maps). Physical Basis of Political Geography, by H. J. Mackinder.—(3) Around and About Armenia, by Col. M. S. Bell. Wall of Derbend, by Hon. J. Abercrombie (map).—(4) Borderlands between Geology and Geography, by the Duke of Argyle (map). Vertical Relief of the Globe, by H. R. Mill (map). Southern California, Past and Present, by Prof. W. G. Blaikie.—(5) The Vikings, by P. Du Chaillu. Recent Explorations in Peru and Bolivia, by H. Guillaume.—(6) The Stevenson Road Country, by Rev. D. Kerr Cross (map). The Mapping of the World, by J. G. Bartholomew (map). Map Projections, by W. A. Taylor.—(7) The Emin Pasha Relief Expedition, by H. M. Stanley (maps).—(7, 8) Voyage Inland from Canton, by Dr. W. G. Dickson.—(8) Russian Laplanders, by V. Dingelstedt.—(9) The Maltese Islands, by John Murray (map and plates).—(10) Physical Features of Brazil, by J. W. Wells. Present State of the Ordnance Survey, by H. T. Crook.—(12) A Railway Through Southern Persia, by Major-Gen. Sir F. Goldsmid. Spanish Honduras, by W. Pilcher.

Glasgow. Proceedings of the Philosophical Society of Glasgow. Vols. XVI., 1884-1885; XVII., 1885-86; XVIII., 1886-87; XIX., 1887-88; XX., 1888-89; XXI., 1889-90.—1888-9: Chili, Present Position and Future Prospects, by J. C. Rogers, Vice-Consul (with map). Fisheries in Relation to Civilisation, by W. A. Smith. Primitive Aryan Civilisation, by Dr. J. Colville. Land Ownership in Scotland, by R. T. Younger, M.A., LL.B. State Purchase of Land in Ireland, by M. Davidson, M.A., LL.B. Magnetic Constants of Earth's Field, by A. Tanakadate, B.Sc. Agricultural Education in this Country and Abroad, by C. M. Aikman. "Ticketed Houses" of Glasgow, by Dr. Russell.

Glasson Dock, Lancaster. Kludonometric Time Tables. Illustrated with Numerous Charts and Plates. Tables for the Lancashire Coast (1888, 86pp.), Lancashire Coast and Bristol Channel (1889, 170pp ; 1890, 278pp.), by W. N. Greenwood, F.R.Met.Soc.

Leeds. Report of the Yorkshire Union of Mechanics' Institutes. 1873, 1877, 1878, 1879, 1880, 1881, 1882, 1884, 1885, 1888, 1889, 1890.

Liverpool. Report of the Committee of the Free Public Library, Museum, and Walker Art Gallery. Thirty-sixth, 1889 ; thirty-seventh, 1890.

Liverpool. *Research*, a Monthly Illustrated Journal of Science. Edited by A. N. Tait, F.I.C., &c. Vol. I., Nos. 4-6, 1888 ; 7-12, 1889. II., Nos. 13-18, 1889 ; 19-24, 1890.—Portrait Gallery—Portraits and Biographies of the following : (4) Professor T. G. Bonney, D.Sc., F.R.S. ; (5) R. A. Proctor, B.A., F.R.A.S. ; (6) Sir J. Lubbock, Bart., M.P., F.R.S., &c. ; (7) J. W. Davis, F.G.S., &c. ; (8) Arabella B. Buckley (Mrs. Fisher) ; (9) Professor W. Boyd Dawkins, M.A., F.R.S., &c. ; (10) Professor T. H. Huxley, D.C.L., LL.D., &c. ; (11) Professor Sir W. Thomson, M.A., &c. ; (12) Sir R. S. Ball, LL.D., F.R.S. ; (13) Sir J. W. Dawson, C.M.G., &c. ; (14) M. E. Chevreul ; (15) Professor W. H. Flower, C.B., &c. ; (18) H. C. Sorby, LL.D., &c. ; (19) Sir F. A. Abel, C.B., D.C.L., &c. ; (20) Professor G. J. Romanes, M.A., LL.D., &c. ; (21) Professor J. W. Judd, F.R.S., &c. ; (22) late S. A. Adamson, F.G.S. ; (23) William Pengelly, F.R.S. ; (24) Professor G. Henslow, M.A., F.G.S., James Bell, C.B., &c.—(4, &c.) Scientific Aspects of various Health Resorts. Reports of various Scientific Societies.—(6, 7) Durham Salt District, by E. Wilson, F.G.S. (with sketches).—(13, 14, 15) Evolution of the Colorado Cañon, by W. Hewitt, B.Sc. (illustrated).—(19) Luminosity of Plants by T. W. Dicker.—(20) Ship Railways, by R. Holland.—(21) Dust in the Air, by Dr. McPherson.—(22) Coast Erosion in Yorkshire, by Rev. E. M. Cole, M.A.—(23) Salt Districts of North America, by T. Ward, J.P. Ship Preservation from Corrosion, by R. Holland.—(24) Bees and Flowers by G. W. Bulman, M.A.

London. The Aborigines' Friend. Vol. III., No. 11, 1888.

London. The Anti-Slavery Reporter. Vol. VIII., Nos. 2-6, 1888 ; IX., 1-6, 1889 ; X., 1-6, 1890.—1889 : (1) Revolution in Uganda.—(2) H. M. Stanley's Journey in Central Africa.—(3) Slavery in Zanzibar and Pemba, by Bishop Smythies.—(4) Imperial British East Africa Company.—(5) Slave Trade in Zanzibar and Pemba. British Zambesia.—(6) Tippoo Tib.—(6, &c.) Anti-Slavery Congress at Brussels.—1890 : (1, 2) H. M. Stanley and the Slave Trade.—(2) Present Condition of Egypt.—(3) H. M. Stanley in England. Tropical East Africa : A Ten Years' Review, by Dr. Felkin (with sketch map). The History of the Stevenson Road. The West Indies, by H. Fowler.—(4) Imperial British East Africa Company.—(6) Slavery among the Chins (Burmah).

London. L'Armenie, Journal Politique et Littéraire. First year. Nos. 1, 2, 3, 7, 8, 9, 11, 12, 1890.—(1) Arts and Crafts of Armenians in Russia. Short History of the People of Ararat.—(2) Unpublished Eastern Tales : Adam and Eve, Cain and Abel.—(3-12) History of the Study of the Armenian Language in Europe, by Professor G. A. Schrumpf.—(12) What the Armenians Want.

London. Journal of the East India Association. Vol. XVI., 1-6, 1884 ; XVII., 1-5, 1885 ; XVIII., 2-4, 1886 ; XIX., 1-7, 1887 ; XX., 1-5, 1888 ; XXI., 1, 2, 3, 5, 1889 (No. 4 missing) ; XXII., 1-5, 1890.—1889 : (1) Value of European and Native Life in India, by P. M. Tait, F.R.S.S., &c.—(2) The Indian National Congress, by C. W. Whish.—(5) The Financial Condition of India, by A. K. Connell. 1890 : (1) India in the House of Commons, by Sir R. Temple.—(2) Preservation of Industrial Arts of India, by C. P. Clarke.—(3) Some Results of the Permanent Settlement, by H. J. Reynolds.—(5) Proposed Organisation of Army in India, by General Sir O. Cavenagh.

London. Journal of Education : A Monthly Record and Review. Nos. 224-233, March-December, 1888 ; 234-245, January-December, 1889 ; 246-257, January-December, 1890.—(234-5-7-8) Principles of Physical Education, by C. Roberts. (237) A Bureau of Education, by Sir P. Magnus.—(238) My Assistant Masters, by Ascott R. Hope.—(240) Teaching of English, by C. Lowry.—(242) Natural Development of Faculty, by Mrs. Corbett.—(243) Higher Commercial Education, by T. W. Haddon.—(244) The New Law on the Common Schools, Norway.—(246) The Limits of Education, by C. Colbeck. Subject Teaching v. Form Teaching, by E. M. Clark.—(247) History and Mock-History, by R. F. Charles.—(248) Intellectual Education at Public Schools, by S. Lupton.—(249) Dr. Fitch and the American Schools.—(250-51) Scholarships from Public Elementary Schools, by F. Bond.—(251) The History of Educational Museums, by W. H. Widgery. Manual Training, by G. Ricks, B.Sc.—(252) Leipsic v. Nääs.—(254) Italian Education (by an Englishman in Italy).—(256) Education System of Girls' Schools compared with that of Boys, by D. Beale.

London. Egypt Exploration Fund. Annual Report, 1886-7.

London. Circulars from the Emigrants' Information Office, 31, Broadway, London. Combined Circulars for Canada, Australia, and South Africa. July, October, 1888 ; January, April, July, October, 1889 ; January, April, July, October, 1890.

London. Le Haïasdan, Organe de l'Association Patriotique Arménienne. First year. Nos. 1, 2, 7, 8, 9, 10, 11, 12, 13, 14. 1889. Containing News, Correspondence, &c., about Armenia, printed in both French and Armenian.

London. The Journal of the Royal Asiatic Society of Great Britain and Ireland. Vol. XVIII., Parts 1-4, 1886 ; XIX., 1-4, 1887 ; XX., 1-4, 1888 (1889, none received) ; XXII., 1-4, 1890.—1890 : (1) Adventures of Japanase Sailor in Malay Archipelago, 1764-71, by W. G. Aston. Archæological Excavation in India, by A. Rea.—(2) Early History of Northern India, by J. F. Hewitt.—(2, 3, 4) Early History of Kannada Literature, by B. L. Rice.—(3) Chinese Antiquity, by H. J. Allen ; and other valuable papers and information.

London. Royal College of Science Magazine (late Science Schools Journal). Conducted by the Students of the Royal College of Science, South Kensington. No. 1, 1886 ; 2-7, 1887 ; 8-16, 1888 ; 17-22, 1889 ; 23-27, 1890.—Our Country Cousins.—(19) Yorkshire College, Leeds..—(20) University College, Aberystwith. (21) Queen's College, Cork. Cycling in Dauphiné and Savoy, by G. A. J. Cole. (25) Dredging in the Irish Sea, by G. J. Hill.—(26) Sir Warington W. Smyth, F.R.S., in Memoriam, by Ben Howe.—(27) Professor Huxley, LL.D., F.R.S. : An Autobiography (with portrait). — (30) Professor J. W. Judd (with portrait). Geology of South African Diamond Fields, by H. D. Griffiths, A.R.S.M.

London. Proceedings of the Royal Geographical Society from the commencement, 1830 to 1890.—1889 : (1) Southern Morocco and the Atlas Mountains, by J. Thomson (map). Visit to Sheshouan, by W. B. Harris.—(2) Journeys in Central Africa, by F. S. Arnot (map).—(3) The Gran Chaco and its Rivers, by Capt. J. Page (map). Glacier Regions of Selkirk Range, British Columbia, by Rev. W. S. Green (map).—(4) Explorations on Chindwin River, Upper Burma, by Col. R. G. Woodthorpe (map). Letters from F. C. Selous, Upper Zambesia (map). Formosa, by G. Taylor.—(5) Letter from H. M. Stanley (map). The Transcaspian Railway, by Hon. G. Curzon (map). Antanambalana River, Madagascar, by L. H. Ransome (map).—(6) Explorations on Welle-Mobangi River, by Capt. Vangele. The Congo and Ngala and Aruwimi Tributaries, by J. R. Werner (map). Further Explorations in the Caucasus (map and view).—(7) Visit to Mount St. Elias, by H. W. Topham (with illustration and map).—(8) Journey Across Greenland, by Dr. F. Nansen. Tribes of North-Western Morocco, by W. B. Harris (with map).—(9) Louisiade and D'Entrecasteux Islands, New Guinea, by B. H. Thomson (map). Expedition to Cockscomb Mountains, British Honduras, by J. Bellamy (map).—(10) Lake Tanganyika, by E. C. Hore (map).—(11) Valley of Upper Nile, by E. G. Ravenstein. Expedition Between the Queensland Boundary and the Telegraph Line, Australia, by D. Lindsay (map).—(12) Cyprus, by Lieut.-General Sir R. Biddulph (map).—1890 : (1) The Bahrein Islands, Persian Gulf, by J. T. Bent (with map and illustrations).—(3) Chinde River and Zambesi Delta, by D. J. Rankin, M.R.A.S. (map). Journey from Blantyre Towards the Loangwa River, by A. Sharpe (map). Visit to Newly-Emerged Falcon Island, South Pacific, by J. J. Lister, M.A. (with illustrations).—(4) The Owen Stanley Range, New Guinea, by Sir William MacGregor, K.C.M.G. (map). Map of Eastern Africa, by J. T. Last (map in two sheets).—(5) Travel in the Caucasus, by Douglas W. Freshfield (with illustrations and maps).—(6) Geographical Results of Last Expedition, by H. M. Stanley (map). Ascent to Summit of Kilima-njaro, by Dr. Hans Meyer (maps). Journey Through Mashonaland in 1889, by Right Rev. G. W. H. Knight Bruce (map). (7) Explorations in Solomon Islands, by C. M. Woodford (map). (8) Explorations in Cilicia Tracheia, Asia Minor, by J. T. Bent (map).—(9) The Karun River, and South-West Persia, by Hon. G. Curzon (maps). Across Luristan to Ispahan, by H. B. Lynch (map). (10) Lieutenant Vaughan's Journey in Eastern Persia, by Major-General Sir F. Goldsmid, C.B., K.C.S.I. Yoruba and Colony of Lagos, by Sir A. Moloney, K.C.M.G.—(11) Zambesia, by E. A. Maund (map). The Partition of Africa (map).—(12) British Central Africa, by H. H. Johnston, C.B. (map). Lake Nyassa to the Upper Zambesi River, by A. Sharpe (map).

Manchester. Art Museum. Report 1885, 1886, 1888-89, 1889-90. Handbook, by T. C. Horsfall, and an Account of the Object and Work of the Museum.

Manchester. Chamber of Commerce. Annual Reports, 1886 to 1890.—1889 contains also Addresses on Indian Railways, by J. Westland and Lieut.-Colonel Marryat.

Manchester. Chamber of Commerce Monthly Record, Nos. 1-12, 1890. — (1) Russian Exports. Foreign Trade of Greece.—(2) Anglo-French Treaty Respecting Boundaries in West Africa.—(3) Cotton Trade, by James Jardine. African Oil Rivers District. Farming in Western United States. Russian Trade with China.—(4) British Trade with Mexico. Siam. French Trade and Industry, 1889. Population of Greece.—(5) Commercial Geography, by Dr. L. C. Casertelli. Wealth of India, and the Hindrances to its Increase, by Wm. Birk Myre.—(6) Cotton Industry in Austria-Hungary. Railways in India. The Persian Trade *viâ* Trebizond.—(7) The Congo Free State. The Salonica Trade Route to the Danubian State.—(8) Production of Coca in Bolivia.—(9) Trade with Western China. The Rajpootana Desert Railway Scheme. Coal Mining in Belgium.—(10) The Trade of Morocco.—(12) Railways in Northern India. Bombay Cotton Bills.

Manchester. The Co-operative Wholesale Society Limited Annual for 1881, 1883, 1884, 1887, 1888, 1889. 1889: Reports of the Co-operative Wholesale Society Limited of England and Scotland. It also contains Contributions on General Commercial Questions, among others a paper about Commercial Geography by Rev. L. C. Casartelli, Ph.D., M.A., and one giving an Account of the Origin and Development of the Manchester Ship Canal.

Manchester. Field Naturalists' Society. Annual Report of the Committee. 1874 to 1883.

Manchester. Geological Society's Transactions. Vol. XVII., Parts 16, 17, 18, 1883-84. XVIII., Part 2, 1884-85.

Manchester. Scientific Students' Association. Report and Proceedings for 1883.

Manchester. *The Ship Canal News.* Vol. I., Nos. 10-26, 1888; II., 1-26, 1888-89; III., 1-26, 1889; IV., 1-12, 1889-90; V., 1, 2, 1890. Contains accounts of the Progress of the Canal, and Short Notes on Commercial Subjects. Fully illustrated, chiefly with views on the Canal.

Manchester. *The Textile Mercury.* Vol. I., Nos. 1-3, 7, 8, 10-36, 1889; II., 37-39, 41-46, 48, 50-54, 56, 57, 59, 61, 62; III., 63, 65-68, 70-80, 82, 84-88, 1890.—1889: Articles and Correspondence about Textile Industries.—(12) The Old Silk Mill, Derby, by E. E. Marsden (illustrated).—(17) British East Africa.—(21, 24, 25, 26, 27) Egyptian Tapestry, by Alan S. Cole (illustrated).—(23) Revival of Industry in Ireland.—(28) Africa as a Source of Cotton Supply, by Rev. A. M. Mackay, C.M.S.—1890: (38, 39, 41, 50) Ancient Fabrics and Embroideries, by Professor Dr. J. Lessing.—(42) France and her Treaties of Commerce.—(54) Weaving and Embroidery in the East, by Professor Lessing.—(59) The Drapery of Equatorial Africa.—(61) Flax Culture in Belgium.—(63) Account of Denver, Colorado, U.S.—(65) Cochineal in the Canary Islands.—(68) The Opening up of Persia.—(74) Sisal Fibre in the Bahamas.—(78) Carpet-making in Syria, by Consul Bissinger (2) (U.S. Consul at Beyrout).—(79) Descriptive Sketch of Caudry. (85) Something about Indiarubber.—(86) Weaving among the Ancient Germans.

Manchester. *The Textile Recorder.* Published by John Heywood, Manchester. Vol. IV., Nos. 38-44, 1886, 45-48; V., 49-56, 1887, 57-60; VI., 61-68, 1888, 69-72; VII., 73-80, 1889, 81-84; VIII., 85-92, 1890.—In all numbers, Articles about Commerce between various Countries, more especially in relation to Britain, and the Progress of Textile Industries. In each number, Special Articles about various Machines used and operations performed in these Industries, with many illustrations, diagrams, patterns, and specimens. In all numbers: Designing and Manufacturing, by R. Beaumont, F.S.A.; and Textile Colouring, by C. O'Neill, F.C.S., F.C.A.—1889: (69) Manchester Technical School.—(74) British Trade Prospects, by Sir R. Temple.—(80) Commercial Interests in West Africa, by Governor Moloney, of Lagos.—1890: (84) Cotton Growing in Ceylon. French and Foreign Competition in Senegal.—(86) Woollen Manufacturers in South Africa.—(87) English and American Competition in South America.—(89) Chinese and Japanese Silk Culture.—(90) Japanese Woollen Manufactures.—(94) How a Lace Curtain is Made (illustrated).—(95) How the First Spinning Machinery was taken to Belgium, by W. E. A. Axon.—(86) School Museums.—(98) New Technical Institutes in Yorkshire.

Newcastle-on-Tyne. Journal of the Tyneside Geographical Society. Vol. I., No. 1, 1888; No. 2, 1889; No. 3, 1890.—(1) First Annual Report.—(2) Scientific Earth-Knowledge as an Aid to Commerce, by H. R. Mill, D.Sc.—(3) Through Darkest Africa, by H. M. Stanley. Incidents connected with the Relief of Emin Pasha, by Surgeon T. H. Parke, A.M.D. The Transvaal Republic: Its Mines and Minerals, by W. Y. Campbell.

Salford. Annual Report of the Museum Libraries and Parks Committee. 1884-85, 1885-86, 1886-87, 1887-88, 1888-89.

MISSIONARY SOCIETIES AT HOME AND ABROAD.

The Missionary Societies' Journals are full of most interesting and valuable facts, and some of them are illustrated with maps, portraits, views, and pictures. Only the most important papers relating to Geography have been indicated.

Such Journals as The Baptist, Church of England (The Intelligencer), Catholic Mission, St. Joseph's Magazine, the Scotch Missionary Journals, and Central Africa, are invaluable.

Basel. Jahresbericht der Evangelischen Missions-Gesselchaft zu Basel.—Zweiundsiebenzigster, 1887. Dreiundsiebenzigster, 1888. Vierundsiebenzigster, 1889. Fünfundsiebenzigster, 1890. Information respecting the Missions in South-West India, China, and the Gold Coast, and Cameroons. Reports of the Secretary and the Inspector, with map of South-West India, 1889. Report of Inspector Ohler, 1890.

Edinburgh. Free Church of Scotland Monthly. December, 1886; October, 1888; January to December, 1889; January to December, 1890.—1889: (January) In East and Central Africa. (June) Manitoba. (August) Simla, Among the Himalayas. (September) To Porchiavo and Back. (October) Professor Blaikie on the Pacific Coast. (November) Homeward Through Canada.—1890: (February) Our Title to Nyasa land. (March) The Central Provinces and Berar (map). (April) Principal Rainy on New Zealand. (August) Sacrifice of Our Nyasa Highland Sanitarium. (September) Nyasaland (map).

Edinburgh. Church of Scotland. Life and Work: A Parish Magazine. July, August, 1889.

Edinburgh. The Church of Scotland Home and Foreign Mission Record. Nos. 57-60, 1889; 61-72, 1890.—Interesting information on Mission Work in India, China, Palestine, Egypt, the Colonies, East Africa, Blantyre, &c., &c. A number of interesting articles by Sir Chas. Bernard, K.C.S.I., F. F. Roget, Esq., Mrs. Rice, Rev. H. Duncan, Rev. J. Muris, &c.

Freiburg (Baden). Die Katholischen Missionen. No. 12, 1887; 1-12, 1888; 1-12, 1889; 1-12, 1890.—This journal is one of the most interesting of the missionary publications, giving Articles, Reports, &c., dealing with the People, Topography, and Natural History of the various Stations. The most important articles, very fully illustrated, are here indicated.—1889: (1, 2) Asia Minor.—(1, 2, 3, 5)

Damascus.—(1, 3, 5, 10, 11) Morocco.—(1, 3, 5, 6, 7, 9, 11) China.—(1-12) East Africa.—(2) Map of East Africa.—(2, 10) India.—(4) Chili.—(8) Aleppo.—(8, 9, 12) Philippine Islands.—(9-11) Congo District.—(11) Fiji Islands.—1890 : (1, 2) Canada.—(1-3, 9-12) India.—(1, 5, 8) Philippine Islands.—(2, 4, 9, 12) Brazil.—(3) China.—(4) Central Asia.—(4-6) Burmah.—(7, 8, 11) Congo District.—(8) Fiji Islands.—(10) Route Map : Stanley's Last Journey Across Africa.—(10, 11) Central Africa.

London. Missionary Herald of the Baptist Missionary Society. August to December, 1885 ; January to December, 1886, 1887, 1888, 1889, 1890.—1889 : The Congo Mission (numerous communications). Life of Rev. T. J. Comber. The Famine in China (several letters on its severity). Asceticism in Missions. The Late Mrs. Joseph Gurney. A Congo Wedding Group. Opium Poisoning in North China. Eastern, Western, West Indian, and European Mission (with illustrations). The Wathen Mission House. Map of Stanley Pool. Mrs. Ellison and Hindu Ladies (portraits). Group of Congo Missionaries (portraits). India, Notes on. Agra, The Leper Asylum, &c. Shansi, North China. The Bahamas. The Aboriginal Peoples of India. Scenes in Peking. Boma, Congo River (photograph). Kiula, Chief of Kindinga. Madaripore (with illustrations). Two Congo Faces : A Congo Fetish (with illustrations). East Bengal. Etoto, Congo (iron smelting, chief, and village, with photographs). Near the Thibet Frontier. San Salvador, Africa. Government Female Training College, Kingstown, Jamaica. China's Sorrow. Sunday Schools in India. Sir Samuel Morton Peto. Zenana Missions. Letters from Mrs. H. W. Bentley, Congo. Buddhist Temple and Monastery at Gyd (with views). Noki (from photograph).—1890 : Distribution of China Famine Relief Fund. Dikoto, Cameroons. Stanley Pool, by Rev. J. L. Rogers. The Ching Monastery, near Tai Yuen Fu (with view). A Chinese Tablet. Map of Shantung and Shansi. Heads of Congo Natives (with illustrations). La Tour Italy (with view). Ndombi, an African Chief (with photograph). Shantung, China, by Rev. W. A. Wills. Kingston, Jamaica, by Rev. J. East. Group of Congo Missionaries (with photographs). Letter from Rev. G. Grenfell, Bangala. Kali Ghat. The Late Lifiaulwisu, Mbanga. Indian Fruit Seller (photograph in group). Ninety-Eighth Report ; The Missionaries ; Eastern, Western, West Indian, European Missions ; Finance, &c., &c. Group of San Salvador Boys and Rev. Ross Phillips. River Scenes in Bengal. Letter from Rev. W. H. Bentley, Congo River. Calabar College, Jamaica. The Cathedral Ruins, San Salvador (with view). Patna, by Rev. J. Stubbs. A Chinese Thanksgiving Sheet. A Congo Voyage. New Up-River Station at Upoto. The "Place" at Bolobo. Accident in Shanghai. Scenes at Tarokeshors (with views). Taxes in the Congo Free State. Indian Ferry Boat (with photograph). Dacca. Group of Jamaica Ministers (with photograph). The Acting Governor-General of the Congo Free State on Missions. Cuttack, Orissa. Sir Charles Wathen and the Congo Mission. An Indian Cremation. Bolobo Boys Playing Hockey (photograph). Travelling in China, by Mr. and Mrs. Midhurst (with views). The Fort of Cuttack, or Katak (with photograph). Work in Patna, by Rev. H. Patterson (with photograph of Ekka). A Funeral Dance at Bolobo, Upper Congo. The Missionary Guild. Lantern Slides and Lectures on India, China, Congo, &c., &c.

London. Eighty-Sixth Report of the British and Foreign Bible Society. 1890.—Reports of the disposal of Bibles in all parts of the world, with many excellent ethnographic, linguistic, and general maps, by R. N. Cust, LL.D., and others.

London. Church Missionary Society for Africa and the East. Proceedings for the years 1883-84, 1885-86, 1886-87, and 91st Year, 1889-90.—Reports from West Africa, Yorubu, Niger, Eastern Equatorial Africa, Egypt, Arabia, Palestine, Persia, India, Ceylon, Mauritius, China, Japan, New Zealand, North West America, North Pacific, and a valuable Note on the Spelling of Native Names. Maps of the World, Intertropical Africa, Eastern Central Africa, The Mohammedan Lands of the East, North India, Western and Southern India and Ceylon, China and Japan, New Zealand (North Island), and British North America. The maps are very well done, and are of value. The great interest of the Report is in Uganda, but almost every page is full of matter both scientific and religious. Light is thrown on native customs, and a good many problems are raised for wise and careful solution in the attempt to civilise the savage and to Christianise the more polished peoples.

London. Church Missionary Intelligencer and Record. Vol. XII., 1887 ; XIII., 1888 ; XIV., 1889 ; XV., 1890.—XIV. : Muscat, Zanzibar, and Central Africa, by A. M. Mackay. Central India. Uganda, by the Editor. The Far West of China, and Journeys in China, by Rev. G. H. Horsburgh. Journal of Mrs. Pruen in German East Africa. Dr. Bruce on the Caspian. Canon Taylor's Critics. On Educational Missions, by Rev. W. Jukes. The Red Indians, by Archdeacon Phair. The Third Revolution in Uganda, by A. M. Mackay. The House of Laymen on African Slavery. Mohammed and Mohammedanism, by Dr. Koelle. James Frederick Schöu, by Dr. Cust. Letters from Eastern Equatorial Africa, by A. M. Mackay, Revs. E. C. Gordon, Walker, Price, Cole, and Wood. Schools in West Africa, by Rev. F. Nevill. Archdeacon Wolfe's Visit to Fuh Kien. Japan, by Rev. E. W. Syle, D.D. Some Under-currents of Thought in the Native Society of India, by Rev. E. H. Perkins, Amritsar. Kin-Shin, by Rev. A. B. Hutchinson. Ceylon. Pakhoi, South China, by Dr. E. G. Horder. The Chu-Chee Mountains, by Rev. A. Elwin. Kashmir : The Medical Mission—Visit of the Rev. R. Clark. Japan : Bishop Wilberforce, by Rev. G. F. Warren. The Bedouin, by Rev. John Zillar. Three Weeks in Fuh-Ming, by Rev. J. Martin.—XV.: The Destruction of Mpwapwa, by Rev. J. C. Price. North-American Philology, by Dr. Cust. A Mohammedan Manifesto against Christian Missions. The Maories of King Country, New Zealand, by Revs. Wiki te Pda and Hone Papahia. H. M. Stanley on the Uganda Mission. Letters from the Rev. R. H. Walker, Nyanza. Mamboia in 1889, by Rev. A. N. Wood. Tour in Sindh, by Rev. A. E. Ball. Abeokuta and Lagos, by the Bishop of Sierra Leone. The Mohammedan Community in Bombay, by Rev. W. T. St. Clair Tisdall. Letters from Uganda, by Revs. E. C. Walker and R. H. Walker, and Messrs. D. Deekes and the late A. M. Mackay. Tokushima, Japan, by Rev. W. P. Duncombe. Japan, by C. J. C. The Anglo-German Agreement, by J. E. C. Hing-Hwa Prefecture, Puh-Kien Province, China, by Rev. Ll. Lloyd. Mr. Stanley's "In Darkest Africa," by Mr. Stanley and Mr. Mackay. The Godavari, by Rev. J. Cain. Uganda, by Rev. R. H. Walker. India, by Rev. W. R. Hackett. The Afghan Mission, Peshawar, by Rev. Worthington Jukes. The Soudan and Upper Niger Mission. Uganda, by Mr. Walker. On Infant Marriage and Enforced Widowhood in India, by An Old Indian.

London. London Missionary Society. 90th, 91st, 92nd, 93rd, 94th Reports ; 95th Report for the year ending April 30, 1889 ; and 96th Report for the year ending March 31, 1890.—Reports from China, North and South India, Travancore, Madagascar, South Africa (Kaffirland, Bechuanaland, Matebeleland), Central Africa, British Guiana, Polynesia (Society, Austral, Hervey, Savage, Samoan, and Loyalty Islands), and New Guinea. Maps of Hong Kong, District of Amoy, China, North India, South India, Madagascar (South-East Coast and Tamatave Districts), South Africa, Central Africa, Polynesia, and New Guinea. The communications are of great interest, especially from Central Africa, China, and Madagascar. Geographical and Anthropological Notes, Political References, Industrial Work, Medical Work, Schools, and the large number of natives engaged in the work of the Society, are all given and referred to in the Reports.

London. The Chronicle of the London Missionary Society. January-December, 1884 ; January-December, 1885 ; January-July, 1886.

London. Catholic Missions. Vol. I., Nos. 1-14, 1886 ; II., 15-24, 1887-88 ; III., 25-36, 1888-89 ; IV., 37-48, 1889-90 ; V., 51, 52, 55, 56, 1890 (49, 50, 53, 54 missing).—1889 : (January) The Land and People Round the Niger Delta, by H. H. Johnston. (February) Map of East Africa, and several interesting Views in German Territory. (July) The Karens of Burma : An Ethnological Study (continued through succeeding numbers), by Rev. Father Bringaud. (November) The Island of St. Vincent (with map and illustrations).—1890 : (August) Syria and the Maronites. (November) The Land of the Gallas and Somali. (December) Up the Sarstoon River (British Honduras).

London. St. Joseph's Foreign Missionary Advocate. Vol. I., Nos. 1-4, 1883 ; 5-8, 1884 ; 9-12, 1885 ; 13-16, 1886 ; 17-21, 1887 ; 22-24, 1888. Vol. II., Nos. 1-4, 1889 ; 5-8, 1890 (No. 7, 1890, not received).—I. : (1) North Borneo.—(5) New Zealand.—(11) The Zambesi (with map).—(12) The Soudan (with large map).—(13) The Soudan (with illustration).—(15) Madras (with illustration).—(18) The Iroquois Indians (with illustrations).—(20) The Abnakis (illustrated).—

(21) The Singhi Mountains (with illustration). Cairo (with illustration).—(22) Tambunan North Borneo (with illustrations).—(24) Japan and the Japanese (with illustrations). The African Slave Trade.—II.: (5) The Pyramids of Egypt.—(8) North Borneo (with map).

London. Eighty-sixth Annual Report of the Religious Tract Society. 1885.

London. Missionary Year Book for 1889. Published by the Religious Tract Society.

London. The Society for the Propagation of the Gospel in Foreign Parts. Reports for the years 1884, 1886, 1888, and 1889.—1889: Reports from India, Ceylon, Singapore, Borneo, China, Japan, Corea, South Africa, St. Helena, Mauritius, Madagascar, Australia, New Zealand (Norfolk Island, Fiji, Honolulu), North America (Canada and North-West), West Indies and South America, and Europe. Maps of Bishop of Bloemfontein's Journey to the Zambesi; Language Map of India; Burmah and the Straits; China, Corea, and Japan; Grahamstown and St. John's; Zululand; Betsiring Country, Madagascar; Madagascar; Newfoundland; and portraits of Bishops Whittey, Rawle, and the late Bishop of Zululand.—The Reports from British North America, Newfoundland, Central Africa, Madagascar, India, and Polynesia, are exceedingly interesting.

London. The Mission Field. Vol. XXX., Nos. 355-360, 1885; XXXI., 361-372, 1886; XXXII., 373-384, 1887; XXXIII., 385-396, 1888 (387 and 395 missing); XXXIV., 397-408, 1889; XXXV., 409-420, 1890. — 1889: (397) The Southern Tounghoo Mission. New Guinea, with map and four illustrations. St. John's, Kaffraria. Two Years in the Mission of Sandwich Bay, Labrador, with a map and illustrations. Work in the Rewari District. The China Famine. Madagascar, with illustrations. Nazareth, with map. Zululand, with map and illustrations. The Telugu Missions, with illustrations. Japan, with three illustrations. From Bloemfontein to the Zambesi. Rewari, with illustration. Shurbo, Upper Burma, with illustrations. The Bishop of Zululand's Journey to Delagoa Bay, with illustration. Widening Horizons, with map of Southern Africa. English Settlements in North China, with a map and illustrations. Under the Rocky Mountains, with illustrations.—1890: Phokoane and Its Outposts, with map and illustrations. British North Borneo, with illustrations. The Karens, with map and illustrations. Puthiamputhur Forty-five Years Ago and Now. Zulu Mission, with illustrations. St. Helena, with illustrations. The Betsirirg, Madagascar. Cawnpore, with illustrations. Chôta Nagpore, with map and illustrations. Hawaii, with map and illustrations. Nazareth, Southern India. Bloemfontein and Mashonaland, with map. Japan, with map and illustrations. The Windward Islands. Singapore, with illustrations. Manitoba, with map and illustrations. Delhi, with map and illustration. Western Australia, with map. Kobé, Japan, with illustration. Bechuanaland, with illustration. Telugu, with map and illustrations. Rewari.

London. Thirty-First Report of the Home and Foreign Missions of the United Methodist Free Churches, for the year ending June, 1887.

London. Central Africa. A Monthly Record of the Work of the Universities' Mission. Nos. 25-36, 1885; 37-48, 1886; 49-60, 1887; 61-72, 1888; 85-96, 1890.—1889: (Jan.) Nyassa News, by Captain of the Charles Janson.—(Feb.) Bishop Smythies Among the East African Insurgents.—(April) News from the Rovuma. Position in Zanzibar, by Rev. W. C. Porter.—(May) Lukoma, by Archdeacon Maples. (June) Interesting Letter relative to the Portuguese in East Africa, by Rev. W. P. Johnson.—(July) View of Street in Pangani.—(September) Letter descriptive of Journey from the East Coast to Lake Nyassa, by Bishop Smythies.—(October) The Wissman Expedition.—1890: (February) The Masasi District and People, with map.—(April) The People of Masasi, by Rev. T. Lupton Taylor.—(August) Great Britain and Germany, by Rev. Horace Waller.—(September) From Nyassa to Naples, by Archdeacon Maples.—(December) Nyasa or Nyassa.

London. Central African Mission. Reports for 1882-83, 1883-84, 1884-85, 1885-86, 1886-87, 1887-88, 1888-89, 1889.—1888-89: Reports from Zanzibar, Rovuma, Nyassa, Magila Districts and Homework. Map of Central Africa, two views of St. John's Church, Mbweni, Zanzibar.—1889: Reports as above. The Political Situation. The Usambara Country. The Bishop's 1889 Journeys. Anti-Slavery Edicts at Zanzibar. New Station on Chisumulu Island. The Bishop's Visit to

Nyassa with map. View of Magila. Mission House, Misozwe.—1890: Reports as above. The Anglo-German Agreement. Self-help among the Natives. The Swahili Bible. The Slave Trade. Growth of South African Church. Political Aspects. Interesting Letters from Mr. Johnson, Archdeacon Maples, Mr. Porter. The Work of the Sisters. A new and valuable map. Newala Church. Nyasa Teachers (native groups). The Lake and Vessels.

London. Wesleyan Methodist Missionary Society. 73rd Report, 1887; 74th Report, 1888; 75th Report, 1889; 76th Report, 1890.—Reports from Missionaries in Europe, Ceylon, Continental India, China, South and West Africa, America, and of the Irish, French, West Indian, Australian, and Canadian Conferences, and Army and Navy Work. Maps are inserted of France, Madras district, Sierra Leone and Gambia, Bahamas. Medical work, natives employed, education, and zenana work are referred to in the reports.

London. Wesleyan Missionary Society Notices. Monthly. 1887, 1888, 1889, 1890.—1887: (April) Among the Gonds, by Rev. J. Parson.—(May) Lagos, by Mr. J. H. Samuel.—1888: (March) Hakka Work in the Shin Kwan Prefecture, by Rev. S. G. Tope, with map.—(May) Ying Tak, Shin Kwan (illustrated).—(June) From London to Mandalay, by Rev. Arthur H. Bestall.—1889: (August) The Abode of Snow (Bengal), by Rev. J. R. Broadhead.—(December) A Thousand Miles into the Interior of South Africa, by Rev. R. F. Appelbe.—1890: (October) In the Highlands of the Kwong Tung Province, by Rev. S. G. Tope. (December) Through the Drackensberg Mountains to Swaziland, by Rev. Owen Watkins.

London. At Home and Abroad. A Wesleyan Missionary Magazine for Young Helpers in the Work. Monthly. 1887, 1888, 1889, 1890.—This is a Juvenile Illustrated Missionary Magazine, well printed in large type, and illustrated. The subjects are mainly taken from the Missionary Notices (which see).

Mangalore. Annual Report of the Basel German Evangelical Missionary Society in South-Western India. 48th Report, 1887; 49th, 1888; 50th, 1889.—The value of the Reports is very great, exhibiting Mission Work carried on by others than British people in India, by preaching evangelisation, education, medical work, the large use of the printing press, and industrial and mercantile establishments. The splendid unselfishness of these missionaries and the success attending their labours is indicated on every page. They may well be referred to for comparison with some of the mission work of other agencies.

Paris. Missions d'Afrique (d'Alger). Sous la Protection de Notre-Dame d'Afrique. Journal of Work. Nos. 69, 77, 1889; 79, 84, 1890.—African Pilgrimage to Rome. The Abolition of African Slavery: Letter from the Cardinal Lavigerie. Remains of the Ancient African Church in the Algerian Sahara. St. Anne of Jerusalem. Missions in Algeria under the Patronage of St. Augustine and St. Monique. Equatorial Africa: Letters from the Rev. R. P. Bresson, at Zanzibar. Letters from the Nyanza, Myab (Sahara), Mpala, Carthage, Buganda, and Tanganyika. The Arab Christian Village of the Altafs. Triumph of Mwanga. Circular Letter of M. the Cardinal Lavigerie on African Slavery. Brief from H.H. Pope Leo 13th to H.E. Cardinal Lavigerie on the African Mission and the Work of the Anti-Slavery Society. Monsignor Lirinhac at Zanzibar. The Address of Cardinal Lavigerie on the Dismissal of a Number of Missionaries to Central and North Africa. The Address of H.E. Cardinal Lavigerie on Slavery at St. Sulpice, Paris, Sept. 24, 1890. Letter from Biskra to the Editor by H.E. Cardinal Lavigerie, and Portrait Group of Native Christian Priests, &c., and of Revs. MM. Hauttecœur, Livinhac, and Girault. Young Negroes' Letters. The Pro-Vicariat of Nyasa. The Work of the Missions. Deaths, New Missionary Sisters, &c.

COLONIAL SOCIETIES, JOURNALS, &c.

Adelaide. Proceedings of the South Australian Branch of the Royal Geographical Society of Australasia. Vol. I., First Session, 1885-86.

Brisbane. Proceedings and Transactions of the Queensland Branch of the Geographical Society of Australasia. Vol. II., Parts 1-3, 1886-87; III., 1 and 2, 1887-88; IV., 1888-89; V., 1 and 2, 1889-90.—1888-89: Sudest and the Louisiade Archipelago, New Guinea, by the Hon. J. Douglas, C.M.G., F.R.G.S. Geographical Distribution of Plants, by W. Soutter. Geographical Notes, &c.—1889-90: His Honour Sir William MacGregor's Ascent of Mount Victoria and Explorations of the Owen Stanley Range, British New Guinea, by J. P. Thomson, F.R.S.G.S., &c. (with map). The Gulf of Carpentaria, by Capt. William Campbell Thomson. Geographical Notes. The Torres Group: The Natives and their Ways, by Douglas Rannie, Esq. Notes Made on the Fly River, British New Guinea, by Captain James M. Hennessy, B.N.G. steamship Merrie England. Notes on the Brisbane River Floods, by J. P. Thomson, F.R.S.G.S., &c. Chatham Islands, by John A. Robertson, Esq. L.S., (with map). Sir William MacGregor's Upper Fly River, British New Guinea, by J. P. Thomson. Geographical Notes.

Melbourne. Transactions of the Victorian Branch of the Royal Geographical Society of Australasia. Vols. III. and IV., 1885-86; V., Parts 1 and 2, 1887-88; VI., 1 and 2, 1888-89; VII., 1 and 2, 1889-90; VIII., 1, 1890.—VI.: (2) Some Coral and Volcanic Islands of the Western Pacific, by F. A. Campbell, C.E. (with map and illustrations). The Northern Shan States, by G. S. Streeter, F.R.G.S. The Historical and Commercial Aspects of the New Hebrides, by Rev. D. Macdonald (with map).—VII.: (1) Synopsis of the History of Geography, by Miss M. S. Hooper. Dr. Sir William MacGregor's Ascent of Mount Owen Stanley, by J. B. Cameron.—VIII.: (1) The hitherto Unexplored West Central Australia, by M. H. Tietkins, F.R.G.S. (with map).

Melbourne. Victorian Year Book. By H. H. Hayter, C.M.G. 1883-84, 1884-85, 1885-86, 1886-87.

Quebec. Transactions of the Geographical Society of Quebec. 1885, 1886-89.—1886-89: Lake Mistassini—Geological, Botanical, &c., Report. The Landfall of Cabot, by J. P. Howley. Natives of the Copper River, by H. T. Allen. Notes on Labrador, by H. Puyjalon. Primitive Races of North America, by A. Gagnon. Winter Navigation of the St. Lawrence, by N. Le Vasseur. Table of Ocean Distances.

Sydney. Proceedings of the New South Wales Branch of the Royal Geographical Society of Australasia. Vols. III. IV., 1885-86. Report on New Guinea, by J. F. Mann. Some Sixteenth Century Maps of Australia, by J. H. Maiden, F.L.S., F.R.G.S. Exploration of New Guinea, by Captain Everill (with map).

Toronto. Annual Report of the Canadian Institute for 1887, 1888, 1889, being part of Appendix to the Report of the Minister of Education, Ontario, with illustrations of pottery, clay pipes, stone pipes, stone implements, flints, &c., of ancient Indians.—1887: Reports of Sections of the Institute, Geological, &c. Archæological Report, illustrated. Tidd's Island. Hay Island.—1888: Reports of Sections. Archæological Report, illustrated.—1889: Reports of Sections. Archæological Reports, illustrated. Townships of York and Vaughan. Geographical Distribution of French Relics in the Counties of York, Ontario, and Simcoe. Museum Specimens.

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FOREIGN SOCIETIES, JOURNALS, &c.

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THE WORLD.

Illustrated Reference Map of the World, highly coloured (Canada on the reverse side), showing coins, flags, architecture, &c., of various countries. 4½ft. by 3ft. H. C. Tunison, Toronto.

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The British Colonies and Possessions, on a uniform scale of 1/7,603,200. 4ft. by 4¾ft. E. Stanford, London, 1885.

The World. Commercial Chart. By J. Bartholomew. With insets of Central Europe, India, South Africa, Canada, &c. 50in. by 68in. G. Philip and Son, London and Liverpool, 1891.

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Photo-Relief Map of Asia. By H. F. Brion and Rev. E. McClure, M.A. Scale, 450 miles to inch. 12in. by 15in. Society for Promoting Christian Knowledge, London.

Asia. Karte von Asie bearbeitet von F. Handtke. Scale : 1/18,886,000. 2ft. by 2¼ft. Carl Flemming, Glogau, 1889.

Asia (General Map). Scale, 1/9,218,880. 3¼ft. by 4ft. W. and A. K. Johnston, Edinburgh and London.

Asia. 4ft. by 5ft. Published by Committee appointed by S.P.C.K. and the National Society. E. Stanford, London, 1882.

Armenia, showing some of Rivers, Lakes, Coasts, and Towns. 39° E. to 51° E. 36° N. to 42° N. 3¼ft. by 5ft. (V.)

China. The Interior, chiefly from Du Halde and the Jesuits, 1710 to 1718, and the Sea Coast, from Modern Authorities. 98° E. to 123° E., 42° N. to 15° N. 1¼ft. by 1ft. E. Stanford, London.

China (part of). Famine Districts. Scale, 30 miles to an inch. 113° E. to 122½° E., 31° N. to 41° N. 23in. by 18in. A. Reid, Newcastle.

Asia, Central. Illustrating Mr. Molesworth's route from Shanghai to St. Petersburg, showing towns and rivers in Siberia. 5ft. by 7ft. (V.)

Chinese Coins. 8 Plates. Drawn by Mr. E. F. Steinthal, from Consul Gardner's designs. 2ft. by 2½ft.

China. The Yang-tze Kiang, from Hankow to Ping-shan, from the survey of Captain T. Blakiston, R.A. By John Arrowsmith. In 2 sheets. 1¾ft. by 2ft. Sheet I. (East) : Hankow to Pa-tung, 3 sections of river, each 2ft. long. Sheet II. (West) : Pa-tung to Ping-shan. 4 sections of river, each 2ft. long. Index Map of River, 2ft. by 7in. 104° 20′ E. to 114½° E. 28½° N. to 31° 20′ N.

Burmah, Siam, and Shan States, Parts of. Showing proposed India, Siam, and China Railway. Compiled from the Survey of H. S. Hallett, M. Inst. C.E. 97½° E. to 102° E. 16½° N. to 20½° N. 3ft. to 3¼ft. E. Weller, lith., London.

Burmah, Tonquin, Siam, &c. Rivers, Towns, and States. Coloured. In 2 sheets. Upper : 92° E. to 112° E. 28° N. to 19° N. 8⅔ft. by 4½ft. Lower : 92° E. by 112° E., 19° N. to 10° V. 8⅔ft. by 4⅓ft.

Palestine, Western. In 26 sheets, from surveys conducted by Lieutenants C. R. Conder and H. H. Kitchener, C.E., 1872-77. Scale, 1/633,600. 34° 12′ E. to 35° 40′ E. 31° 10′ N. to 33° 25′ N. 12¾ft. by 7ft. Printed for the Committee of the Palestine Exploration Fund, at the Ordnance Survey Office, Southampton, 1880.

Palestine, Western. On roller from above. Palestine Exploration Fund.

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Karte von Afrika, bearbeitet von F. Handtke. Scale, 1/14,500,000. 2ft. by 2⅓ft. C. Flemming, Glogau.

Africa. Spezial-Karte von Afrika, entworfen von H. Habenicht, bearbeitet von demselben, B. Domann and Dr. R. Lüddecke. Scale, 1/4,000,000. 6½ft. by 6ft. Justus Perthes, Gotha, 1885.

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Afrika. Physikalische Wandkarten. In 6 sheets. By H. Kiepert. Scale 1/8,000,000. 48in. by 45in. D. Reimer, Berlin, 1873.

Africa. A new and most exact map of Africa. Described by N. I. Vischer. John Overton, London, 1658.

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Three Outlines of Africa. 3ft. 6in. by 3ft. (V.)

Tunis (Port). Scale 1/40,000. 11in. by 16in. Harrison and Sons, litho., London.

Egypt, &c. (Rough Sketch Map). Rivers and Towns. 50° E. to 20° E., 35° N. to 0°. 5½ft. by 4½ft. (V.)

Egypt and the Egyptian Soudan. Chief Towns, Coasts, and Rivers. 30° E. to 45° E., 11° N. to 33° N. 90in. by 72in. (V.)

Soudan (Part). Facsimile of Map drawn by General Gordon, at Khartoum, March, 1874, of his route from Suakin to Berber and Khartoum. Scale about 1/1,325,000, or 21 miles to an inch. E. Stamford, London, 1885.

Red Sea (Lower Part). Parte Meridionale del Mar Rosso. Dedicated to His Majesty the King of Italy. Scale 1/15,000,000. 37° E. to 45° E., 21° N. to 10° N. 2¼ft. by 1¾ft. C. Virano, Roma, 1885.

Red Sea (Lower Part), Abyssinia, &c. Carta dell' Alto Egitto, dell Abissinia, e delle Regioni Limitrofe. Scale 1/5,000,000. 23° E. to 55° E., 22° N. to 1½° N. 1½ft. by 2⅓ft.

Massowa. Rada di Massaua e Baja di Annesley. Scale 1/500,000. 38° 55′ E. to 40° 35′ E., 15° 50′ N. to 14° 40′ N. 11in. by 1ft. 2in. Roma, 1885. Foto lit. del Comitato di Artiglieria e Genio.

Equatorial Africa. Political Map. By J. G. Bartholomew, F.R.G.S. Scale 1/5,600,000. 5° E. to 46° E., 12° N. to 12° S. 20in. by 33in. Imperial British East Africa Co., July, 1890.

East Africa. The Country East of Lake Nyassa. Compiled from the documents of the Rev. W. P. Johnson. 33° E. to 39° E., 8° S. to 18° S. 1½ft. by 11in.

Map of Journey to Kilwa, 1883. By Consul H. E. O'Neill. Scale 1/1,000,000. 35° E. to 41° E., 14° S. to 16¾° S. 1ft. by 2ft. Published for the Proceedings of the Royal Geographical Society, 1884.

Africa (East Central). Karte von Central-Ost-Afrika von Dr. Paul Englehardt and I. V. Wensierski. Scale 1/3,000,000. 27° E. to 45° E., 2° N. to 16° S. 2ft. by 2ft. J. H. Neumann, Berlin, 1886.

Magwangwara District. Sketch Map. By Rev. W. C. Porter. Scale 8 miles to the inch. 30° 40′ E. to 37° 50′ E., 9° 20′ S. to 11° 40′ S. 22in. by 30in. (V.)

Eastern Africa (Part of). Prepared for the Company by E. G. Ravenstein, F.R.G.S., &c. Scale 1/500,000 (8 miles to the inch). 33° E. to 41° E., 1° N. to 5° S. 4½ft. by 6ft. Printed and Published for the Imperial British East Africa Company by G. Philip and Son, London, 1889.

Eastern Central Africa. Showing Field of Universities' Mission. European Protectorates coloured. 28½° E. to 42° E., 4° N. to 19° S. 1½ft. by 11in. John Bartholomew & Co., Edinburgh.

East Africa. Deutsch-ostafrika. J. I. Kettler's Spezial Wandkarte. Scale 1/3,000,000. 29° E. to 54° E., 14° S. to 14° N. 3½ft. by 3ft. Geographischen Institut zu Weimar.

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South Africa. Compiled by Rev. A. Merensky. Scale 1/2,500,000. 11° E. to 37° E., 15° S. to 35° S. 3ft. by 3¾ft. J. H. Newmann, Berlin, 1888.

Central Africa. Showing Route of Emin Pasha Expedition. 10° E. to 40° E., 7° S. to 20° N. 5ft. by 5½ft. (V.)

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Central Africa. L'Afrique Equatoriale entre le Congo et l'Ogoué. Par Dr. J. Chavanne. Scale 1/2,000,000. 10° E. to 18° E., 0° to ,7° S. 16in. by 18in. Institut National de Géographie, Bruxelles, 1884.

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Central Africa. Map Illustrating the Journeys of H. M. Stanley in the Emin Pasha Relief Expedition. By T. B. Johnston. Scale 1/10,300,000, 163 miles to an inch. 5° E. to 45° E., 7° N. to 21° S. 1¼ft. by 1⅔ft. W. and A. K. Johnston, Edinburgh and London, 1890.

Central Africa. By J. G. Bartholomew, F.R.G.S. Showing Spheres of Influence, June, 1890, Stanley's Route, &c. Scale 1/5,600,000. 5° E. to 43° E., 6° N. to 19° S. 1¾ft. by 2½ft. J. Bartholomew & Co., Edinburgh, 1890.

Central Africa. Showing H. M. Stanley's Route from Yambuya to Lake Albert Nyanza. 3° E. to 43° E., 15° N. to 15° S. 1⅓ft. by 1¾ft. W. and A. K. Johnston, Edinburgh and London, 1889.

West Africa. Carte du Haut Niger au Golfe de Guinée, par le Pays de Kong et le Mossi, levée et dressée de 1887 à 1889. Par Capitaine L. G. Binger, par ordre de M. Etienne, Sous-Secretaire d'Etat des Colonies. Scale 1/1,000,000. 7° W. to 0° W., 4½° N., to 14° F. 3⅔ft. by 4⅓ft. Service Geographique des Colonies. Lith. F. Appel, Parrot & Cie., Paris.

Niger Country. Timbuctoo to Lake Tchad. 3° W. to 16° E., 18° N. to 5° N. Rough Map. Rivers and Towns. 8ft. by 6ft. (V.)

Congo Free State. Scale 1/4,000,000. Institut Nationale de Geographie, Bruxelles, 1885.

Congo Free State. By H. M. Stanley. Scale 45 miles to the inch, about 1/300,000. 9° E. to 35° E., 10° N. to 13° S. 35in by 41in. E. Stanford, London.

Congo. Depuis l' Equateur jusqu' à l'ocean. Scale 22 miles to the inch. 12° E. to 19° E., 0° to 6½° S. 21in. by 22in. Institut National de Geographie, Bruxelles, 1883.

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AMERICA.

A new and most exact map of America, described by N. I. Vischer, and done into English, &c. 13½in. by 18in. John Overton, London (about 1636).

Canada. Government Map of Canada, from Red River to the Gulf of St. Lawrence. Compiled by Thos. Devine, Head of Surveys, Upper Canada Branch, Crown Lands Department, 1859. 61° W. to 97° W., 40° N. to 51° N. 2½ft. by 5¼ft. Thompson & Co., Quebec ; E. Stanford, London.

North-West Territories (Dominion of Canada). 120° W. to 80° W., 49° N. to 62° N. 2⅛ft. by 3½ft. Dominion Lands Office Department of the Interior, Ottawa, 1883.

Canadian Pacific Railway System. Scale 84 miles to the inch. 12in. by 39in. E. Stanford, London, 1886.

Grand Trunk Railway of Canada. 13in. by 26in. Rand, McNally, & Co., engravers, Chicago.

Manitoba (part of), showing Dominion and Railway Lands Surveyed. Scale 9 miles to the inch. 96° 30′ W. to 101° 30′ W., 49° N. to 51° N. 16in. by 25in. Canadian Pacific Railway Co., Montreal.

Newfoundland (outline map), le French Shore et les Grands Bancs. Par Edouard Marbeau. 51° W. to 62° W., 45° N. to 52° N. 14in. by 14in. Revue Française Exploration, April, 1890.

West Indies (outline map). Scale about 16 miles to the inch. 72in. by 100in. (V.)

Honduras. Mapa de la Republica de Honduras. Par A. T. Byrne, C.E., M.E. Scale 1/1,000,000. 83° W. to 90° W., 12° N. to 18° N. 1¾ft. by 2½ft. G. W. and C. B. Colton & Co., New York, 1886.

Honduras, British. Scale about 2 miles to the inch. 86° W. to 90° W., 19° N. to 15° N. 160in. by 100in. (V.)

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United States. Wall Atlas, constructed and drawn under the direction of A. Guyot, by E. Sandoz (in 4 sheets). Scale 1/3,500,000. 38in. by 54in. Chas. Scribner & Co., New York.

United States (part of). 77° W. to 91° W., 32° N. to 40° N. 10in. by 16in. Southern States Coal, Iron, and Land Company.

United States (South), showing railway and steamship lines operated by the Southern Pacific Railway Company. 16in. by 30in. Southern Pacific Company, 1890. Poole Bros., map engravers, Chicago.

North Pacific Railway (U.S.). 86° W. to 126° W., 50° N. to 38° N. Stations, rivers, lakes, and states (coloured). 9½ft. by 4⅓ft.

Texas (railway map). Scale 40 miles to the inch. 17in. by 20in. Galveston, Harrisburg, and San Antonio Railway Company.

Florida. Railroad and township map. By C. Granville. Scale 16 miles to the inch. 21½in. by 30in. South Publishing Company, New York, 1886.

Missouri and Arkansas. 3ft. by 1¾ft. St. Louis, Iron Mountain, and Southern Railway Company, 1886. Rand, McNally & Co., printers, Chicago.

Washington (West) and Oregon (North). Map showing land grant. Scale 6 inches to the mile. 2½ft. by 2½ft.

Washington (East), Montana, and Idaho. Map showing land grant. 1½ft. by 3½ft. Northern Pacific Railway Company, 1887. Rand, McNally & Co., printers, Chicago.

California. Climatic map. Scale about 30 miles to the inch. 2ft. by 9in. Southern Pacific Railway Company, 1887. Crocker & Co., printers, San Francisco.

Palermo Colony, Butte County, California. Bird's-eye view. McAfee and Baldwin, San Francisco.

South America. By F. Handtke. Scale 1/13,000,000. 28in. by 22in. Carl Flemming, Glogau, 1889.

Guiana. Kaart van Guiana naar de beste bronnen en eigen opnemingen geteekend in 1888 door W. L. Loth, Gouvernements Landmeter in Suriname (showing territory in dispute between Britain and Venezuela). Scale 1/1,000,000, with enlarged plans of the capitals, scale 1/25,000. 51½° W. to 61° W., 2° N. to 8½° N. 29in. by 41in. J. H. de Bussy, Amsterdam, 1889.

Argentine Republic. Showing especially pasture lands and uncultivated lands. By E. Weller. Scale 65 miles to the inch. 36in. by 24in. Published by the Information Office of the Argentine Republic, London.

Peru. By H. Guillaume, F.R.G.S., Consul-General for Peru, Southampton, 1888. 60° W. to 81° W., 2° S. to 18° S. 17in. by 22in.

Peru (part of). By H. Guillaume, F.R.G.S. Sketch map illustrating a paper on recent explorations of Colonel A. R. P. Labre, &c., in the vicinity of Madeira, Perus, Madre de Dios, Urubamba, and Ucayali Rivers. 63° W. to 75° W., 7° S. to 15° S. 17in. by 25in.

Venezuela. Mapa Fisico y Politico de los Estados Unidos de Venezuela, with plans of chief towns.

Map of Venezuela. 51° W. to 75° W., 1° S. to 13° N. 1½ft. by 1ft. 2in. Printed at the Government Printing Office, 1884.

Venezuela. Mapa Fisico y Politico de los Estados Unidos de Venezuela, with eastern portion enlarged to show territory in dispute between Venezuela and Britain.

Map of Venezuela. 1½ft. by 1ft. 2in.

Eastern Venezuela. 57° W. to 64° W., 2° N. to 12° N. 1½ft. by 1ft. Printed at the Government Office, 1887.

OCEANIA.

Oceania. Karte der Inseln des Weslichen Grossen Oceans. Scale 1/15,000,000. 130° E to 150° W., 25° N to 450° S. 22in. by 23in. L. Friederichsen, Hamburg, 1879.

Samoa. By Herkt. Scale 1/850,000. 187° E. to 191° E., 13° S. to 14° 30′ S. 8in. by 19½in. Carl Flemming, Glogau, 1889.

British New Guinea. Rough map. 5ft. by 6ft. (V.)

New Guinea (south east). Scale 4½ miles to the inch. 146¾° E. to 148° E., 8° S. to 10¼° S. 36in. by 36in. Surveyor-General's Office, Brisbane, 1889.

British North Borneo. 115° E. to 119⅓° E., 3¼° N. to 7¼° N. 2⅓ft. by 3½ft. Published by E. Stanford, for the British North Borneo Company, 1888.

New Zealand. Coast Line and Chief Rivers. No. 76. 167½° E. to 178½° E., to 34° N. to 45° N. 2½ft. by 1⅓ft. Ruddiman, Johnston, & Co., London.

The Central Thermal Springs North Island, New Zealand. Showing Lakes, Rivers, Mountains, and Towns. Scale 1in. to 5 miles. 1⅔ft. by 1⅓ft. Mount Cook, its Glaciers and Lakes, South Island, New Zealand. Scale 1in. to 4 miles. 1⅔ft. by 1⅓ft. General Survey Office, Wellington, New Zealand, 1888.

Interior Cold Lakes, Otago, New Zealand. Scale 4 miles to the inch. 17in. by 23in. Western Lakes and Sounds, Middle Island, New Zealand. Scale 8 miles to the inch. 17in. by 23in. Compiled and drawn by T. M. G. Hills and W. Deverell. Published by James McKerrow, Surveyor-General, Wellington, New Zealand, 1888.

Chatham Islands. From surveys by S. P. Smith and John Robertson, 1868 and 1883. Scale 1in. to 2 miles. 176° W. to 177° W., 43° 40' S. to 44° 12' S. 1⅔ft. by 2ft. (2.) General Survey Office, Wellington, New Zealand, 1887.

Weather Charts of Australasia for 1889-1890 (about 170). Clement L. Wragge, Government Meteorologist. 1½ft. by 1¾ft.

Maps of Queensland. Showing Amount of Cloud, Rainfall, &c., on various dates, 1887. 2ft. by 1¾ft. Printed for the Queensland Post and Telegraph Department, Meteorological Office, at the Government Printing Office, Brisbane.

Victoria. Rivers, Counties, Lakes, and Towns. 140° E. to 151° E., 34° S. to 39½° S. 6½ft. by 4⅓ft. Constructed and engraved at the Surveyor-General's Office, Melbourne. Published by authority of the Government, Aug. 15, 1872.

EUROPE.

North Pole. Map. 20ft. by 20ft. 1870.

North Polar Chart. (Frontispiece to W. and A. K. Johnston's Royal Atlas.)

Europe (von J. Ritter von Scheda). Scale 1/2,592,000. 6ft. by 7½ft. Artaria & Co., Wien, 1872 (revised in 1877).

Europe. By J. W. Lowry, F.R.G.S. 17in. by 24in. *Weekly Dispatch* Atlas.

Photo-Relief Maps of Europe. By H. F. Brion and Rev. E. McClure, M.A. (Series No. III.) Scale 220 miles to the inch. 12in. by 15in. (1) Series No. II. Plain. (2) No. III. Rivers, towns, &c. Society for Promoting Christian Knowledge, London.

Europe. Karte von Europa, bearbeitet von F. Handtke. Scale 1/9,350,000. 2ft. by 2¼ft. Carl Flemming, Glogau, 1889.

Coasts of Europe (4 charts). 1. The North Sea. Coasts of Southern Norway, Denmark, Holland, Belgium, and England. 3° W. to 11° E., 62° N. to 57° N. 2ft. by 3ft. (corrected to 1876). 2. The English Channel. Southern Coasts of England and Ireland, and North Coast of France. 12½° W. to 1½° E., 52° 15' N. to 48° N. 4½ft. by 2ft. (corrected to 1880). 3. From the British Islands to the Mediterranean Sea. 14° W. to 2° E., 52½° N. to 35° N. 2ft. by 3ft. (corrected to 1879). 4. The Mediterranean. 6° W. to 36° E., 47½° N. to 26° N. 3ft. by 2ft. (corrected to 1872). Published according to Act of Parliament at the Hydrographic Office of the Admiralty.

Europe. Scale 140 miles to the inch. 19in. by 24in. G. Philip and Son, London and Liverpool.

Central Europe. Wall map. By A. Guyot. Scale 65 miles to an inch. 7° E. to 32° E. 42° N. to 60° N. 20in. by 26in. Ch. Scribner & Co., New York.

Norway. Coast Maps. Key Map: Scale 1/2,400,000 (Oversigtskart til de af Norges Geografiske Opmaling udgivne Kystkarter), 1885. Maps issued from 1868 to 1889.

General Maps: A. North Sea (2 plates). Scale 1/1,000,000. (1) Faerder to Utsire; (2) Utsire to Kin; (3) Kin to Trondhjem; scale 1/350,000. (4) Trondhjem to Tromso; (5) Tromso to Russian boundary; scale 1/800,000. B. Maps 1-13; scale 1/200,000.

Special Maps: A. 1-14; scale 1/100,000. B. 1-5, 7, 9a, 9b, 10a, 10b, 11a, 12a, 12b, 13a, 13b, 15-35, 37-41, 43; scale 1/50,000. Nos. 1, 2 (Ny Raekke), scale 1/50,000.

Fishing Maps: 1 (4 plates), 1/100,000. 1870; 2 (4 plates), 1/100,000, 1869; 3 (2 plates), 1/200,000, 1873; 4 (3 plates), 1/100,000, 1887. Norges Geografiske Opmaling.

Norway. Key map, 1/200,000, Southern Norway, in 18 sheets; scale 1/400,000. Sheets I. to IX. 15in. by 18in.

Norway County Maps, scale 1/200,000: Bratsbergs-amt. (in 2 sheets), 1857; Tromso-amt. (in 4 sheets), 1874; Smaalehnenes-amt., 1826; Buskeruds-amt. (in 2 sheets), 1854; Bergen (South)-amt. (in 4 sheets), 1857; Bergen (North)-amt. (in 4 sheets), 1880; Akershus-amt., 1827; Christians-amt. (in 3 sheets), 1845; Nedenes-amt. (in 2 sheets), 1858; Stavanger-amt. (in 2 sheets), 1866; Hedemarkens-amt. (in 3 sheets), 1829; Grevskabernes-amt., 1832; Romsdales-amt. (in 4 sheets), 1882; Lister oc Mandals-amt., 1862. Norges Geographiske Opmaling.

Norway. Topographical Map of Norway; scale 1/100,000; 9, A, B, C, D; 10, A, B, C, D; 14, A, B, D; 15, A, B, C, D; 16, C, D; 19, B, D; 20, A, B, C, D; 21, A, C; 22, A, B; 23, A; 25, B, D; 26, A, C; 29, B; 30, D; 31, B; 42, A, C, D; 43, B, C, D; 45, D; 46, A, B, C, D; 47, A, B, C, D; 48, B; 49, A, B, C, D; 50, A, B, C, D; 51, C, D; 52, B; 53, A, B, C, D; 54, A, B, C, D; 56, A, B; 57, B. Each 13½in. by 18in. Geological Map of Norway (coloured); scale 1/100,000; 9, D; 10, C; 14, B, D; 15, A, C; 16, D; 19, B; 20, A, C; 22, B; 25, B; 26, A, C; 46, A, B, C, D; 47, C, D; 49, B; 50, A, C. Each 13½in. by 18in. Norges Geographiske Opmaling.

Christiania District, scale 1/25,000, in 6 sheets, each 18in. by 22½in.; Northern Norway, by Professor P. Munch, 1852, scale 1/700,000, 34in. by 24in.; Southern Norway, geological map, 1877, scale 1/1,000,000, 34in. by 24in; Norway Map, coloured to show sea depths and heights of land, scale 1/2,400,000, 28in. by 22in. Norges Geographiske Opmaling.

South-Eastern Europe and South-Western Asia. The Eastern Question in Europe and Asia. 20° E. to 80° E., 25° N. to 52° N. 16in. by 26in. E. Stanford, London.

France (Stumme Physikalische Schul-Wandkarten. Der Lander Europa's bearbeitet von R. Kiepert; Frankreich). Showing coasts, rivers, mountains, and chief towns (no names). Scale 1/1,000,000. 5° W. to 8° E., 53° N. to 42° N. 4½ft. by 3⅓ft. Geogr. lith. Institu Steindr. v. W. Greve, Berlin.

Causses of the Cevennes. Showing rivers, towns, plateaus, and railways. 6½ft. by 4½ft. (V.)

Italy. (Carta della Circoscrizione Militare Territoriale del Regno, legge No. 1467, series 3. Scale 1/1,200,000. 7½° E. to 18½° E., 47° N. to 36½° N. 3⅓ft. by 2¾ft. Instituto Geographico Militare, 1884.

Italy. (Carta Generale del Regno Lombardo-Veneto, ridotta dalla Carta topographica nell'Instituto geographica Militare dell' I. R. Stato Maggiore Generale in Milano, 1838, riveduta, 1856. Scale 1/288,000. 8½° E. to 13¾° E., 44½° N. to 47° N. 3ft. by 5ft. Copied by the Anastatic Process in 1859, at the Ordnance Survey Office, Southampton. E. Stanford, London.

Southern Italy; Carte du Royaume de Naples et de la Sicile. 11½° E. to 18½° E., 43° N. to 36° N. 2½ft. by 2ft. E. Andrivean-Goujon, Paris, 1860.

Turkey (Carte de la Guerre Turco-Russe en Europe et en Asie, dressée par Erhard.) Scale 1/4,000,000. 1⅓ft. by 2¼ft. Erhard, impremerie, Paris. Hatchette & Co., Paris; E. Stanford, London.

Germany, General-Karte von Deutschland; Deutsches Reich, nebst Deutsch-Österreich und Schweiz. Bearbeitet von Handtke. Scale 1/1,825,000. 6° E. to 23° E., 56° N. to 45° N. 2½ft. by 2½ft. Carl Flemming, Glogau, 1889.

Turkey; Carte-Generale de l'Empire Ottoman en Europe et en Asie, dressé par Henri Kiepert. Scale 1/3,000,000. 16° E. to 52° E., 28° N. to 49° N. 34in. by 48in. D. Reimer, Berlin, 1867.

Balkan Peninsula. By F. Handtke. Scale 1/1,700,000. 16° E. to 30° E., 36° N. to 48° N. 31in. by 25in. Carl Flemming, Glogau, 1889.

Photo-Relief Maps of Scotland. By H. F. Brion and Rev. E. McClure, M.A. Scale 19 miles to the inch. 15in. by 12in. (1) with heights of mountains, &c., positions of chief towns (series No. II.); (2) rivers, counties, towns, &c. (series No. III.) Society for Promoting Christian Knowledge, London.

Scotland (Orographical map). By John Bartholomew, F.R.G.S. Scale 10 miles to an inch. 2ft. 9in. by 1ft. 10in. Adam and Charles Black, Edinburgh.

Outer Hebrides (Lewis and Harris). By John Bartholomew, F.R.G.S. Scale 2 miles to an inch. 2⅓ft. by 1⅔ft. A. and C. Black, Edinburgh.

Southern Norway. (Reisekart over Det sydlige Norge, ved Kaptein Per Nissen.) Scale 1/800,000. 13° E. to 14° E., 68° N. to 65° N. 3½ft. by 2⅓ft. Alb. Cammermeyer, Kristiania, 1889.

Index to Ordnance Map of England and Wales. 1 inch to the mile. G. Philip and Son, London.

The British Empire. By W. Shawe, F.R.G.S. On a uniform scale of 1/7,800,000. Geo. Philip and Son, London.

Illustrated Map of the British Isles, with plans of the 14 chief towns. 2⅓ft. by 2ft. H. C. Tunnison, London.

Angleterre (England, Ireland, France, &c.) 10½in. to 10in. Atlas de Diògo Homena Heliographie. J. Gaulthier, 1886.

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England and Wales. 3½ft. by 4ft. W. and A. K. Johnston, London.

England and Wales, "Excelsior Map." By G. W. Brown, F.R.G.S. 6° W. to 2° E., 55° 48′ N. to 50° N. 5ft. by 4ft. G. W. Bacon & Co., London.

England and Wales, Raw Products: Iron, Copper, Lead, Tin, Coal, and Salt. 72in. by 45in. (V.)

England, Manufactures: Cotton, Woollen, Linen, Silk, Chemicals, Machinery. 72in. by 45in. (V.)

Yorkshire and Lancashire (from Leeds to Manchester). By F. D. King. In four sheets. Sheet 1, 2° 18′ W. to 1° 54′ W., 53° 30′ N. to 53° 38′ N. 1⅝ft. by 2⅝ft.

Outline Map of Lancashire. 2° W. to 3° 20′ W., 53° 15′ N. to 54° 30′ N. 2¾ft. by 2ft. Ledsham, Manchester.

Lancashire (the Countie Pallatine of Lancaster, described and divided into hundreds). 1⅝ft. by 1¼ft. John Speed, London, 1610.

Buxton, Matlock, and Environs. Reduced Ordnance map. Scale 2 miles to an inch. 1½ft. to 1ft. W. H. Smith and Son, London.

Buxton. Reduced Ordnance plan. Scale 6in. to the mile. 1ft. by 1½ft. W. H. Smith and Son, London.

London (7 sheets). Scale 6in. to the mile. (1) City of London, 6in. by 10in.; (2) Chelsea, 13in. by 24in.; (3) Westminster, 14in. by 21in.; (4) Marylebone, 26in. by 24in.; (5) Finsbury, 26in. by 18in.; (6) Hackney, 25in. by 21in. (7) Southwark, 10in. by 21in. E. Stanford, London.

Manchester (from Failsworth to Worsley). Showing principal roads, rivers, and a few districts. 7½ft. by 4½ft. (V.)

Greater Manchester. Scale 1in. to the mile. 11in. by 12in. *Manchester City News*, March, 1883.

Manchester Drink Map. 23in. by 17in. United Kingdom Alliance, Manchester, 1889.

Plan: Free Trade Hall.

Liverpool. Scale 6in. to the mile. 17in. by 27in. J. Slater.

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Society of Arts, 1878.) 14pp.—Die Schule des Seewesens Handbook. Illustrated. By R. Werner. 392pp. Weber, Leipzig, 1866.—La Nouvelle Université Orientale d'Angleterre. Par J. Van Den Gheyn. 10pp. Ch. Peeters, Louvain, 1885.

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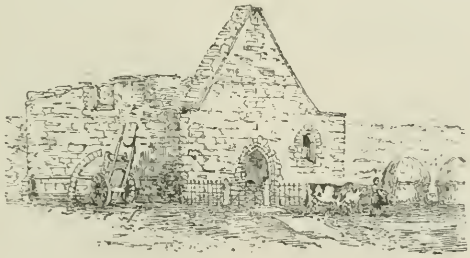

LANTERN SLIDE LIST, 1890.

N.B.—All Slides, except those marked *, are square. (3¼in. × 3¼in.)

EUROPE.—I.

1 Map, England and Wales.
2 Booth Hall, Manchester.
3 Booth Hall, group of members, 1888.
4 Eastham, group of members, 1888.
5 Eastham, Ship Canal View.
6 Eastham, Ship Canal View.
7 Eastham, Ship Canal View.
8 Map, Manchester.
9 Swans.
10 Cattle.
11 Ashworth Valley, Heywood, group of members, 1890.

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1 Athens.—General View of Acropolis.
2 Athens.—Acropolis.
3 Athens.—Entrance to Acropolis.
4 Athens.—Erechtheum.
5 Athens.—Erechtheum.
6 Athens.—Temple of Jupiter.
7 Athens.—Theseum.
8 Athens.—Observatory.
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14 Patras.—Lighthouse.
15 Patras.—Shipping in Harbour.
16 Patras.—View further in Harbour.
17 Patras.—Old Venetian Castle.
18 Patras.—Moonlight, looking west.
19 Vostizza.—View from Above Town.
20 Vostizza.—Principal street.
21 Vostizza.—Street scene.
22 Vostizza.—Public well.
23 Vostizza.—Street scene.
24 Vostizza.—Native costume.
25 Vostizza.—Scene outside a Currant Agent's.
26 Bacharach (Rhine) view.
27 Map, Causses of the Cevennes.

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3 Armenia.—Ruins of Ani.
4 Armenia.—Ruins of Ani.
5 Armenia.—Ruins of Ani.
6 Li Hung Chuan.
7 Chinese Lady and Child.
8 North Formosa.—Natives.
9 North Formosa.—View.

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10 Sultan.
11 Sultan.
12 Sultan and Wives.
13 Sultan and No. 1 Family.
14 Daughters of Sultan.
15 Wife and Son of Sultan.
16 Emperor as Priest.
17 Empress.
18 Emperor and Son (court dress).
19 Emperor's Dancing Girls.
20 Emperor's Body Guard.
21 Crown Prince.
22 Crown Prince.
23 Thirty-second Child of the Emperor.
24 Native Princess.
25 Court Dress.
26 Bride (in costume).
27 Bride and Bridegroom.
28 Instantaneous Group.
29 Girl (lower class)
30 Girls (chewing betel root).
31 Tapestry Worker.
32 Tapestry Worker.
33 St. Ani (native beauty).
34 Native Gentleman.
35 Opium Smokers.
36 Tomtom Players.
37 Lady Musicians.
38 Musician.
39 Musician.
40 Actor.
41 Actor.
42 Theatrical Performance.
43 Native Sweetmeat Vendor.
44 Methods of Travelling.
45 Mail Steamer.
46 Palace of Governor.
47 Cocoa Palms.
48 Crater of Merapi.
49 Bamboo Bridge.
50 Military Parade Ground.
51 Saw Pit.
52 Scenery of the Tropics.
53 Scenery of the Tropics.
54 Scenery of the Tropics.
55 Scenery of the Tropics.
56 River at Biutengong.
57 Samarong.
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60 Ruined Temple, Kalansan.
61 Rice Fields, Batavia.
62 English Gentleman's House, Batavia.
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64 Sumatra.—Padang Beach.

65 Sumatra.—Rice Stacks.
66 Sumatra.—Waterfall, Padang.
67 Sumatra.—Wedding Procession.
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72 Bombay.—Street scene (instantaneous photograph).
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9 Kabinda.—Porto Rico.
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12 Kabinda.—Cocoa Nut Palms.
13 Kabinda.—Cemetery.
14 Kabinda.—Hammock Travelling.
15 Kabinda.—Hammock Travelling.
16 Kabinda.—Hammock Travelling.
17 Kabinda.—Hammock Travelling.
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19 Kabinda.—Women.
20 Kabinda.—Women.
21 Kabinda.—Women.
22 Kabinda.—Women.
23 Kabinda.—Women.
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25 Kabinda.—Steward.
26 Kabinda.—Hunters.
27 Kabinda.—Banana Plantation.
28 Kabinda.—Baron Puma and Daughter
29 Banana.—Creek.
30 Banana.—Post Office.
31 Banana.—British Factory.
32 Banana.—British Factory.
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36 Banana.—State Premises.
37 Banana.—State Premises.
38 Banana.—State Premises.
39 Banana.—State Premises.
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41 Banana.—S.S. Governor Albuquerque.
42 Banana.—S.S. Cabenda.
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51 Noki.—Congo River.
52 Noki.—Congo River.
53 Noki.—Congo River.
54 Noki.—Congo River.
55 Noki.—Congo River from Noki.
62 Noki.—Congo River from Noki.
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57 Ango-ango, Congo River.
58 Nkalakala, Congo River.
59 Kasala, Congo River.
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63 Congo River.—Railway Site.
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89 Loanda.—Lower City.
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11*Philadelphia.—Girard Avenue Bridge
12 Philadelphia.—Fairmount Basin.
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30*Weber River.—Index Rock.
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34 Big Tree Grove, Keystone State.
35 Mammoth Grove.—Mother and Son.
36 Mammoth Grove.—Pioneer's Cabin.
37 Mammoth Grove.—Father of the Forest.
38 Section of Original Big Tree.
39 House Built on Original Big Tree Stump.
40 Witches' Cauldron and Devil's Pulpit.
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42*Yosemite Valley.—Vernal Falls, 400ft. high.
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44*Donner Peak and Snow Sheds.
45*Snow Sheds (interior).
46 Snow Sheds (interior).
47 Yosemite Valley, Nevada Falls, 600ft. high, and Cap of Liberty.
48*Yosemite Valley.—Bridal Veil Falls and Three Graces.
49 Yosemite Valley.—The Domes (from the West).
50 Yosemite Valley.—The South Dome (from the East).
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55 San Francisco.—Sunset in the Bay.
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THE
MANCHESTER GEOGRAPHICAL SOCIETY.

RULES.

I. OBJECT AND WORK.

The object of the Manchester Geographical Society is to promote the study of all branches of Geographical Science, especially in its relations to commerce and civilisation.

The work of the Society shall be :—

1. To further in every way the pursuit of the science, as, by the study of official and scientific documents, by communications with learned, industrial and commercial societies, by correspondence with Consuls, men of science, explorers, missionaries, and travellers, and by the encouragement of the teaching of geography in schools and colleges.

2. To hold meetings at which papers shall be read, or lectures delivered by members or others.

3. To examine the possibility of opening new markets to commerce and to collect information as to the number, character, needs, natural products and resources of such populations as have not yet been brought into relation with British commerce and industry.

4. To promote and encourage, in such way as may be found expedient, either alone or in conjunction with other Societies, the exploration of the less-known regions of the earth.

5. To inquire into all questions relating to British and Foreign colonisation and emigration.

6. To publish a Journal of the proceedings of the Society, with a summary of geographical information.

7. To form a collection of maps, charts, geographical works of reference, and specimens of raw materials and commercial products.

8. The Society shall not enter into any financial transactions beyond those necessarily attached to its declared object.

II. ORGANISATION.

9. The Society shall consist of ordinary, associate, corresponding, and honorary members.

10. A Council shall be chosen annually from the ordinary members to conduct the affairs of the Society. It shall consist of a President, four or more Vice-Presidents, a Treasurer, two or more Honorary Secretaries (including a Secretary for Foreign Correspondence), and twenty-one Councillors.

11. There shall be three Trustees elected by the Society, who shall hold office until death, disability, insolvency, or resignation. They shall be members of the Council by virtue of their office.

12. Any vacancy occurring in the Council during the current year may be filled up by the Council.

III. ELECTION OF MEMBERS.

13. Every candidate for admission into the Society as an ordinary or an associate member must be proposed by a member. The proposal shall be read out at the next Ordinary Meeting of the members, and any objection shall be forwarded in writing to the Secretary within seven days.

14. The election of members is entrusted to the Council. The names of those elected shall be announced from the chair at the next Ordinary Meeting after the election.

15. The Secretary shall within three days forward to every newly-elected member notice of his election, a copy of the Rules of the Society, and a card announcing the days on which the Ordinary Meetings will be held during the session. But the election of an ordinary or associate member shall not be complete, nor shall he be permitted to enjoy the privileges of a member, until he shall have paid his first year's subscription. Unless such payment be made within three calendar months from the date of election the election shall be void.

16. The Council shall have power to elect honorary and corresponding members.

17. Women shall be eligible as members and officers of the Society.

IV. PAYMENTS.

18. An ordinary member shall pay an annual subscription of £1 1s., or he may compound by one payment of £10 10s. An associate member shall pay an annual subscription of 10s. 6d. The Society's year shall begin on the first day of January.

19. Members shall not be entitled to vote or to enjoy any other privilege of the Society so long as their payment shall continue in arrear, but associate members shall not vote nor shall they take any part in the government of the Society.

20. The first annual payment of a member elected in November or December shall cover his subscription to the 31st December in the year following.

21. On the first day of January in each year there shall be put up in the rooms of the Society a complete list of the members with the amount of their subscription due, and as the amounts are paid the fact shall be marked on the list.

22. Notice shall be sent to every member whose subscription shall not have been paid by the first of February, and if the arrears are not discharged by the first of July the Council may remove the member from the list of members.

V. MEETINGS.

23. The meetings of the Society shall be of three kinds—Ordinary, Annual, and Special.

24. In all meetings a majority of those present shall decide all questions, the President or Chairman having a casting vote in addition to his own.

ORDINARY MEETINGS.

25. The Ordinary Meetings of the Society shall be held once a month, from the month of October to the month of May, or oftener, if judged expedient by the Council.

26. All members whose subscriptions are not in arrear shall have a right to be present. All ordinary members shall have the privilege of introducing one visitor.

27. The order of proceeding shall be as follows :—

(*a*) The minutes of the last meeting to be read and if correctly recorded they shall be signed by the Chairman.

(*b*) Presents, whether of money, books, maps, charts, instruments or specimens, made to the Society to be announced.

(*c*) The election of new members to be declared and the names of candidates to be read.

(*d*) Papers and communications to be read and discussed.

28. At these meetings nothing relating to the rules or management shall be brought forward, but the minute book of the Council shall be on the table at each meeting for the inspection of any member, and extracts therefrom may, with the consent of the chairman, be read to the meeting on the requisition of any member.

29. On occasions of exceptional interest the Council may make provision for a larger admission of visitors.

ANNUAL MEETINGS.

30. The Annual Meeting of the members shall be held at such time and place as the Council shall determine.

31. Fourteen days' notice of this meeting shall be sent to every member within the United Kingdom, who has given his address to the Secretary, and notice of the meeting shall be advertised in such newspapers as the Council may direct.

32. The object of this meeting shall be to receive the Annual Report of the Council and the Treasurer's Balance Sheet, to hear the President's address, to elect the Council and officers for the ensuing year, and to transact any other business.

33. Any two ordinary members may nominate candidates for the Council or for office not later than one week prior to the day of election, and the names of candidates so nominated shall be at once put up in the rooms of the Society. The election of the Council and officers shall be by ballot.

SPECIAL GENERAL MEETINGS.

34. The Council may call a Special General Meeting of the Society whenever they shall consider it necessary, and they shall do so if required by twenty ordinary members.

35. A week's notice of the time and object of every Special Meeting shall be sent to all members. No other business shall be entertained than that of which notice has been thus given.

36. Twenty ordinary members shall form a quorum.

VI. COUNCIL AND OFFICERS.

THE COUNCIL.

37. The government of the Society shall be entrusted to the Council, subject to the rules of the Society.

38. The Council shall annually elect a Chairman and Vice-Chairman.

39. The President or the Chairman, or any three members of the Council, may at any time call a meeting thereof, to which every member of the Council shall be summoned.

40. Seven shall form a quorum.

41. In order to secure the more efficient study and treatment of the various subjects which constitute the chief work of the Society, the Council may appoint Committees for special purposes. These Committees, with the approbation of the Council, may associate with themselves any persons—whether members of the Society or not—from whom they may desire to obtain special assistance or information. The Committees shall report to the Council the results of their proceedings.

42. The President, Chairman, Vice-Chairman of the Council, and the Honorary Secretaries, shall, by virtue of their offices, be members of all Committees appointed by the Council.

PRESIDENT AND VICE-PRESIDENTS.

43. The President is, by virtue of his office, the chairman of all the meetings of the Society. In the absence of the President, one of the Vice-Presidents may preside.

CHAIRMAN OF THE COUNCIL.

44. It is the duty of the Chairman of the Council to see that the rules are properly observed, to call for reports and accounts from Committees and officers, and to summon, when necessary, special meetings of the Council and of Committees.

TREASURER.

45. The Treasurer has the charge of all accounts; he shall pay all accounts due by the Society after they have been examined and approved by the Council.

46. He shall see that all moneys due to the Society are collected, and shall have power, with the approval of the Council, to appoint a collector. All moneys received shall be immediately paid to the bankers of the Society.

47. The bank passbook and the books of account shall be laid upon the table at every ordinary meeting of the Council.

48. The accounts shall be audited annually by two members, who shall be elected at an ordinary meeting at least one month before the Annual Meeting.

SECRETARIES.

49. The duty of the Honorary Secretaries shall be:—

(*a*) To conduct the correspondence of the Society and of the Council.

(*b*) To attend the meetings of the members and of the Council, and minute their proceedings.

(*c*) At the ordinary meetings, to announce gifts presented to the Society since their last meeting; to read the names of all new members and of candidates for admission and the papers communicated to the Society, which have been directed by the Council to be read.

(*d*) To have immediate superintendence of all persons employed, to make arrangements for the meetings of the Society, and to take charge of all maps, books, furniture and other effects.

50. It shall be the more especial duty of one of the Honorary Secretaries to conduct, as may be directed by the Council, correspondence with Foreign Societies and with persons resident abroad

51. In addition to the Honorary Secretaries, there shall be a paid Secretary appointed by the Council, whose duties shall be to assist the Honorary Secretaries, to issue the notices of the Council and of the Society and to act under the instructions of the Council.

LIST OF MEMBERS,

December 31st, 1890.

Note.—H signifies Honorary, C—Corresponding, L—Life, A—Associate, * Affiliated Societies. All others are Ordinary Members.

HAberdare, The Right Hon. Lord, G.C.B.
Addyman, Thomas
Aldred, Thos., F.C.A.
Aldred, Wm., F.C.A.
Alexander, Bernard
AAlexander, W., jun.
AAllen, C. H. W., F.R.G.S.
Allen, Walker, jun.
AAnderson, Miss J. C.
Andreasian, Ohannes
AAndreasian, Mrs. O.
Anson, The Ven. Archdeacon
Armistead, Richard
Armitage, Benjamin, J.P.
Armitage, George Herbert
Armitage, Sam.
Armitage, S. F., J.P.
Armitage, V. K., M.A., J.P.
Armitage, William, J.P.
Arning, Charles
AArnold, W. A.
Arsenian, A. O.
AAshburn, William
AAshton, W. A.
Ashworth, Francis
Attkins, Edgar

Baddeley, John
Bagley, Ralph
Bailey, G. H.
Bailey, Alderman W. H.
ABaker, William
Balfour, The Right Hon. A. J., M.P.
Ball, Edward
Ballantine, Major R. F.
ABalmer, A. W.
Balmer, J. E.
Barclay, George
Barker, James
Barker, John Lees
Barker, Reuben C.
Barker, Richard
ABarlow, James
Barlow, John R.
Barlow, Samuel, J.P.
Baron, Alderman William, J.P.
Bass, Hermann
ABates, John, B.A.
Bates, Ralph, J.P.
ABatho, Thomas
Batty, Alderman William, J.P.
ABecker, Miss Lydia E.
Becker, Wilfred
Bedell, R. J.
Behrens, Charles
Behrens, Henry
Behrens, Frank
Behrens, Gustav
Beith, Gilbert, J.P.
Beith, J. A., J.P.
HBelgians, His Majesty the King of the, K.G.
ABelisha, B. I.
Bell, Frederick
Bentley, Isaac
ABerry, Harold
ABessant, W. S.
Beyerlein, Hans
ABickerton, Richard
Biema, C. Van
CBigot, Professor Leon
Birch, Herbert
Birley, Thomas Hornby
Black, Surgeon-Major J.M., F.R.C.S.E.
Blair, George Beatson
Blake, John Charles
Bleakley, Horace W.
ABleakley, Thomas
ABlelock, W.
Bles, A. J. S.
Boardman, James, F.C.A.
LBoddington, Councillor Henry, J.P.
HBodio, Professor Luigi
Bolton, H. Hargreaves
Bolton, Joseph
HBonaparte, Prince Roland
Booker, Joseph
Booth, Samuel
ABooth, William
Borsari, Prof. Ferdinando
Bostock, Thomas
ABottomley, J. Alfred
Bottomley, William, J.P.
Bowes, G. T.
ABowker, A. W.
ABradburn, James

ABradburn, S. J., F.S.A.
Bradley, William
Bradshaw, Edward
Brammer, G. F.
Bramwell, Samuel
ABramwell, Thomas
Braund, Herbert
Brettauer, L.
ABrierley, J. Swallow
ABrierley, R. B., B.A.
Bright, Jacob, M.P.
ABroadfield, E. J.
ABrook, S. Hamill
ABrooks, E. J.
Brooks, Councillor Joseph
Broome, Joseph, J.P.
ABrothers, R. G.
CBryce, J. Annan
ABubier, Louis
ABuckley, B , J.P.
Buckley, W. H.
ABurnham, Samuel
*Burnley Lit. and Sc. Club
LBurton, Frederic
Burton, W. J.
Butler, E.
Butler, Samuel
Butterworth, Councillor J. H.
Bythell, J. K.

ACadman, Wm.
Calvert, D. R.
ACalvert, George W.
HCameron, Commander V. L., R.N., C.B.
Campion, G. G.
ACardwell, J. J.
Carter, J. N.
Carver, Benjamin, J.P.
Casartelli, Rev. L. C., M.A., Ph.D.
Cawley, Frederick
Chadwick, John
AChapman, Alfred
Cheetham, J. F., J.P.
Cheetham, Walter
Cheetham William
AChild, Rev. Cyril
Child, W. A.
Chivers, C. T.
Chorlton, Isaac
Chorlton, J. C.
AChurchill, Wm., jun.
Churchill, W. S.
Clapham, John, J.P.
AClarke, Charles A.
Clarke, J.
Clegg Neville
Clemson, T. W.
CClerke, Miss Ellen M.
ACockayne, Miss
ACohen, Sigismund, V.-Consul for Austria
ACohen, Meyer
Colbeck, Rev. A.
CColquhoun, A. R., F.R.G.S., M.I.C.E.
Cooper, Philip E.
Cooper, Reuben
ACooper, Thomas P.
ACopley, F. A.
Corbishley, Rev. Thomas
Core, Professor T. H., M.A.
Costeker, Charles
Costley, Thomas
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THE JOURNAL

OF THE

MANCHESTER GEOGRAPHICAL SOCIETY.

MR. J. F. HUTTON, F.R.G.S.,

Vice-President of the Manchester Geographical Society, and one of its Founders.

(*See portrait.*)

TO record the loss of useful citizens is always a sad task, for it cannot but remind us of "vacant chairs" in the midst of our changing lives. New men arise and do new work, but for a time the places of those who are gone cannot be filled, and the work they undertook cannot be taken up at once by those who are left. Such a man was the late Mr. J. F. Hutton, who died on March 1st, 1890, at Cairo. His work was so pre-eminently his own that there is now no one to carry it on. Mr. Hutton's work as one of the founders of the Manchester Geographical Society was so active, the interest he took in it was so deep, the aid he lent to it was so great, that it is impossible to leave his name and work unrecorded in the Journals of the Society.

Mr. Hutton was not a Manchester man in the literal sense of the word. He was born in London, within sound of Bow Bells, on November 25, 1826, but the best and most useful part of his life was spent in Manchester, to which he came in the year 1853, with his brother, Anthony Hutton, to strike out a new branch of trade with Africa. His father and grandfather before him were engaged in the African trade, but the old firm was changed, and Mr. Hutton confined his operations to extending the trade of Manchester with the uncivilised parts of the Dark Continent. This business is still being carried on by his sons, and we have the unusual instance of four generations in the same business. Mr. Hutton saw many changes in Africa during his business life in Manchester. When he first came to this city the trade was confined to the coast, and whatever goods found their way into the interior only did so by the inadequate and slow means of transport in the hands of the natives. Now all is fast changing. Explorers have crossed and recrossed the continent, missionaries have settled in the very heart of Africa, and after them the merchants have followed. Steamers are running up the Niger and Binue; on the Upper Congo cotton goods are to be bought more easily than they were to be had on the Lower Congo fifty years ago. Huge caravans go up from Bagomoyo to the fertile lake district, and the day is not far hence when railways will bring the interior of this vast continent within as easy reach for Manchester goods as the centre of India. Mr. Hutton had a broad and far-seeing intelligence, and was always ready to give his assistance in opening up the Dark Continent, which he knew must some day become a great market for the manufacturers of Britain.

The intimate knowledge which he possessed of every part of Africa (a knowledge which often put our Government officials to shame), and the deep interest he took in all movements for the promotion of trade with Africa, soon drew the attention of the Manchester Chamber of Commerce to the fact that they had amongst their body a man who could do good and useful work for its commerce, and Mr. Hutton, though of a retiring disposition, had to step forward into the post for which he was naturally fitted. Mr. Hutton's first labours on the African Committee of the Manchester Chamber of Commerce were the commencement of an untiring work for the public good, which grew more and more useful every year until his health prematurely broke down, and his energies were lost to his city and his country.

We do not propose in this memoir to deal with Mr. Hutton's private life, except in so far as it may serve to bring out details which may be interesting to the public.

It was in 1852 that Mr. Hutton made his first practical acquaintance with Africa. Owing to the sudden death of his father the business fell on his shoulders, and it became necessary that the state of the factories spread all along the Gold Coast, belonging the firm, should be investigated. He was then twenty-five years of age. The first business was to charter a steamer, and on March 2nd he started from Liverpool in the screw steamer Emerald. Travelling then was not what it is now. They had eight other passengers, and on the day after starting they found that there were only two tablecloths on board, no clean bed linen, only iron forks and spoons, coffee but no coffee mill, and, generally speaking, the stores were found wanting. It took them thirteen days to reach Madeira, and the marvel is that they arrived there at all; for on Sunday, March 7, it was discovered that the after-hold was full of water, and that there was no means of getting the pumps at it. Mr. Hutton writes in his diary for that day, "This is the most miserable Sunday I ever spent. My cabin is the only one free from water, and has been filled all day with the other passengers, wet through from bailing. Provisions, boats, dresses, all floating about. The cargo in the after-hold has had to be shifted to cut through the bulkhead to enable the water to be got at. The uncertainty as to the cause of this large quantity of water and the conjecture as to making for the first port or taking to the boats renders our position most painful." They decided to make for Madeira as fast as possible, but, to add to their misfortunes, on the following day the screw stopped, owing to the imperfect "screw packing." For nine hours they were laid-to, all hands meanwhile pumping and bailing. They then got the screw to work again, but twice again it stopped, and each day from the 7th to the 14th the diary contains the entry "All hands to the pumps, water increasing." Finally, at 3-30 a.m., on March 14, the water got into the engine-room, and they prepared to leave the vessel; but as they were then not far from Madeira, they strained every nerve, the engineers wading up to their middle in water to keep the engines going, the passengers bailing out the water with the coal buckets, and by 11 a.m. they anchored off Funchal, and, with fresh hands to the pumps, they saved the ship from sinking.

It was March 24 before the steamer was ready for sea again, and on April 2 they were off the River Gambia. The style of the navigation may be gathered from the following extract: "1 p.m., land sighted about twelve miles distant; course directed towards it. ½ past 2 p.m., land and breakers straight ahead; course altered to S.S.E. Vessel at anchor to S. about six miles; steamed towards her;" and again, "Mate calculates longitude at 15°. Captain Woodhead made it 19°. The latter proves to be right." On this voyage Mr. Hutton stopped at the following places on the West Coast: Bathurst, S. Andrews, Elmina, Cape Coast Castle, Anamaboe, Accra, Quitta, Grand Popo, Ahgrey, Porto Novo, Badagry, Lagos, and Sierra Leone. The diary contains chiefly entries relating to private business, which detained him on the West Coast until August, and doubtless during that time he was gathering experience for the future. The voyage home was not without drawbacks. Two of the crew mutinied, and had to be removed at Sierra Leone; the captain was a drunkard, and the ship was within an ace of going on the rocks in one place; and finally the captain died in a drunken fit. The mate being incompetent, and there being a gentleman on board who understood navigation, Mr. Hutton had to take the responsibility of appointing him captain. The mate, of course, refused to recognise him, and generally speaking the rest of the voyage was a troubled one, and a tremendous undertaking for a young man of twenty-five.

In February, 1853, Mr. Hutton again went out to the West Coast. This time he did not charter a steamer, and his sea-going experiences, though uncomfortable, were not so unfortunate. Besides seeing the places he had previously visited, Mr. Hutton went to Goree, Liberia, Old Calabar, and the island of Fernando Po, and again returned to England about the end of August. These two voyages were the only practical experience Mr. Hutton had of Africa, but they were sufficient to give him a grip of affairs generally at any time on the West Coast, for, vast as Africa is, life on the Gambia, the Niger, or the Congo is much the same, and the needs of the people are at all times much the same also.

Two extracts from his diary may interest our readers. The first is at Liberia, or Monrovia as it was then called. On board the steamer, as cabin companion, Mr. Hutton had a Mr. Newnham, going out to be British Consul in this republic of freed slaves. They landed together, and went up the hill to the town, at the far end of which is the house of President Roberts, built of bricks, and of some size, with an arched piazza in front. "The president greeted us very coolly, expressed no pleasure on receiving the Consul, nor offered to contribute to his comfort or wants. After about twenty minutes' conversation we took our leave to visit the British Consulate, without his even offering us a glass of water after our heating walk. The house set apart for the Consulate appeared quite deserted and dilapidated. The walls in parts are without plaster or paint, the floors and timber work giving way, and the first heavy rain would wash the place down. The other Consuls gave a most unsatisfactory account of the place. The President appeared to be a clever rogue, who has spent the money advanced by England, for the improvement of the place, largely on himself. The people generally are very untrustworthy, and speak with a strong Yankee accent. There is a lovely view from the town, both seawards and into the interior. Some of the houses are good, built both of stone and wood. There is a town hall, an academy, government house, custom house, printing offices, two chapels, &c., but as for the people—most of the men were prowling about in dingy uniforms, consisting of seedy blue frock coats, epaulettes and sword, and a straw hat. The quality of the dress seemed to be the last consideration. The President received us in a greasy coat void of buttons, a dirty shirt and neckcloth, and both boots burst to a considerable extent. We all left the town much disgusted at what we had seen and heard."

The other extract refers to the conclusion of the first Ashantee war, which was going on while Mr. Hutton was on the Gold Coast:—

"Thursday, April 14th. Started from Cape Coast with Governor Hill and others to visit the camps of Dunquah, Uratil, and Yancoomassie, in all nine hammocks. At Uratil there were about 3,000 men, including 70 of the Gold Coast corps. The whole force turned out and passed in line before the governor. Some of them are very fine men, and all dressed in every kind of curious costume, armed with guns, swords, cutlasses, or any other warlike implement. The camp was formed of huts about 4ft. high, consisting simply of sticks driven into the ground and the top covered with palm and plantain leaves. . . . At the Yancoomassie camp our party went right through the lines, being a single line of men on each side of a broad road, cut by Adjt. Hill, for a distance of 1¾ mile. The whole body, consisting of 14,000 or 15,000 men of the different tribes round, presented arms and shouted as the governor passed along the line. Each tribe had its chief standing under a huge umbrella surrounded by 'cabbocress' and boys holding a kind of sword with the handle, and the knob at the end covered with a thin plate of gold, and a standard-bearer carrying a piece of silk embroidered with some grotesque object, and a Union Jack in the corner, the standard surmounted by a piece of glass or some animal carved in wood. The effect of such a line of men extending along the road for such a distance, with a background on each side of noble trees, was extremely picturesque. (We may say that Mr. Hutton made a most effective sketch of this scene.) . . . The Ashantee messengers have arrived to say the king wishes for peace. The head man delivered his message with the king's axe, covered with leopard skin and ornamented with gold, resting on his shoulders. . . . Governor Hill then reassembled the loyal chiefs, and, explaining the terms of peace he had negotiated, thanked them for their services, and asked them to decide what should be done to the two head chiefs of Assim, who had sold their people to the king of Ashantee. The Fantee chiefs and Solomon, the principal chief of Assim after the traitors, found them guilty, and wished they should be beheaded on the following day. As the following day was Sunday, it was postponed until Monday, after which we set out again for the coast."

We may add here that Mr. Hutton made many graphic sketches of the scenery and native life on the West Coast of Africa, some of which appeared in the *Illustrated London News* at the time of the second Ashantee war in 1873.

In August, 1855, Mr. Hutton married, and thus became practically settled in Manchester. For the next twenty years his life was that of many another honourable Manchester merchant, unknown outside his own circle of friends, but known to them as one who one day might be called on to give the benefit of his business experience and talent to Manchester generally. The outside public first became aware that he was something more than a successful merchant in 1876, when he formed one of the deputation who waited on Lord Carnarvon with reference to the proposed cession of the Gambia to France. Practically, it was owing to Mr. Hutton's letters and representations that this cession did not take place, and in recognition of his knowledge and grasp of the African trade he was in 1877 elected a director of the Manchester Chamber of Commerce, and from that time until the date of his death his energies were given unsparingly, and often at the sacrifice of his own business, to the interests of the community. In 1879, following the initiation of the Bishop of Salford, he formed one of the provisional committee for founding the Manchester Geographical Society; but merchants then did not understand as well as he did the need of the study of commercial geography. This effort appeared to fail. In 1885, bad trade and need of new markets brought the question pressingly to the front, and the present secretary of the society, aided by Mr. Slagg, Mr. Hutton, Mr. B. Armitage, the Bishop of Salford, and others, were instrumental in establishing the society, and Mr. Hutton was always most active in forwarding its interest, and one of the most valued members of the Council of the Society.

In 1877, Stanley made his first memorable descent of the Congo, and in 1878 the King of the Belgians formed an international association for the purpose of further exploration and opening up the Congo to commerce. Mr. Hutton attended most of the meetings in Brussels in November, 1878, and he and Sir W. Mackinnon were the only two Englishmen who subscribed to the original expedition which resulted in the Congo State. In 1883 Her Majesty's Government proposed to make a treaty with Portugal on the Congo question, allowing them to annex the mouth of the river, to which they had long laid claim. This would have meant the ruin of our commercial interests, and a new and important market would probably have been closed. Mr. Hutton was, at that time, one of the most active directors of the Chamber of Commerce, and mainly owing to his influence then, and in 1884-85, when he was President of the Chamber, the treaty with Portugal was never ratified. He was also exceedingly active in getting the Congo State recognised by the European powers.

But Mr. Hutton was not only interested in the Congo, he was also one of the founders of the National African Company, now the Royal Niger Company, which obtained such extensive sovereign power for Great Britain along the Niger and Binue, which may be of inconceivable value to Lancashire and England in the future. He was also one of the founders of the British East African Company—in fact, to quote the words of the *Manchester Courier*, "Every man who makes his mark in the world is a specialist in some shape or form, and Mr. Hutton had made Africa his special subject. His interests were largely bound up with the development of the Dark Continent, but he did not confine his work to the districts in which he personally was concerned. If we may slightly alter a well-known adage, we might apply to Mr. Hutton the words 'Nihil Africanum a me alienum puto.' All African questions interested him. He bought and read all African books. Every explorer in Africa, every missionary, found a friend in him; and as most of them, at one time or another, came to Manchester, they found a hearty welcome at his house, Mr. H. M. Stanley having stayed there several times."

East Africa is at present more interesting to us than the West

Coast, but it was not so until lately. Mr. Hutton for many years had foreseen the result of our inactivity in that region, and had constantly urged the Government and officials at the Foreign Office to step in and declare a protectorate over Zanzibar. Now the protectorate is declared, but had it been done ten years ago the result would have been vastly different. We were at one time paramount in Zanzibar, but we allowed the Germans to intrigue and to undermine our influence, with the result that they now hold the main trade routes from Zanzibar to the centre of Africa, and this territory will probably be closed to British goods as soon as the twenty years of free trade expires which were declared at the Treaty of Berlin. If our Government were to consult men like Mr. Hutton, who are intimately acquainted with all the details of the trade, and also with the geography (this latter the Government official is always ignorant of) of the foreign countries they have to deal with, we should see fewer of those blunders made which so often act ruinously to British interests.

One of the last labours of Mr. Hutton was his work on the Emin Pasha Relief Committee. At the end of 1886 the Government declared they could not, or would not, undertake the work, and soon afterwards we find Sir W. Mackinnon and Mr. Hutton corresponding together and meeting together, and very soon a committee was formed, and in an incredibly short time the whole matter was cut and dried, and the expedition sent out. The whole matter is such recent history that it is in the minds of everyone, and needs no reference to here.

During the few weeks Mr. Hutton spent in Egypt he constantly met Mr. Stanley, who was then at Cairo, resting from his labours, but also hard at work on his book. But the meeting of these two friends, after nearly four years, was only for a short time; and we can only remark, on the fitting coincidence, that one who had his life-interest in Africa should end his days there, and that his last conversation with any outside his own circle should have been with one who, whatever his faults, is undoubtedly the greatest explorer of the Dark Continent.

In 1885 he was induced, very unwillingly, to represent North Manchester in Parliament. He was by no means a politician in the ordinary sense, but he was the very man to represent the commercial interests of our city. After his election his life was more active than before, but the irregular hours and the worries of electioneering and Parliamentary life probably hastened his end; for the work of his own business alone, and also the active part he took in the management of the two African Companies of which he was a director, in addition to his energetic work in the Manchester Chamber of Commerce, was sufficient alone for any man, without the addition of sitting through wearisome meetings in the House of Commons, and unable to leave for fear of a division, to say nothing of the constant little worries to which any man is subject who puts up as a candidate for a large town.

During his short Parliamentary life he was respected by all, and listened to with interest, for he never spoke unless he had something to say. He also took an active part with Mr. Henniker Heaton in endeavouring to get our postal service with our colonies reformed. Although so short a time in Parliament, he made his mark; and, later on, when a committee was appointed to inquire into the workings of the various laws on trade marks, Mr. Hutton was selected by the Government to serve on the committee, as a man capable of representing Manchester in a question which perhaps is of more importance to her large export trade in cotton goods than any other; for the opinions arrived at by this committee were the origin of all the recent legislation against infringement of trade marks, false folding, and other fraudulent practices.

Mr. Hutton's work on this committee may be gauged by the unanimous vote of thanks passed to him by the Manchester Chamber of Commerce: "That this Chamber gratefully records its special thanks to Mr. J. F. Hutton for his services to the trade of this district upon the committee of the Board of Trade appointed to inquire into the question of the Trade Marks Act. It would record its high appreciation of Mr. Hutton's great sacrifice of time in his attendance at the meetings of the committee, and his tact and judgment in bringing out in the examination of the witnesses the strength of the Manchester case, and the strength of his recommendations embodied in the report."

Mr. Hutton, besides being Consul for Belgium in this city, was also J.P. for the County of Lancaster, a Fellow of the Royal Geographical Society, and a member of the Organising Committee of the Imperial Institute, of which the Prince of Wales is chairman.

Mr. Hutton had large numbers of African curiosities, which have been exhibited from time to time. He had also one of the finest collections of carved ivories in England, which was exhibited at the Art Treasures Exhibition in 1878, and a large case of which was lent for some time to the Philips Park Museum.

As we said to start with, this is not a memoir of Mr. Hutton's private life. Suffice it to say that the main feature of his character was the determination that if he did a thing at all it should be done thoroughly well. Nothing could exceed the patience and perseverance that he gave to any work; and anyone who came into contact with him felt that he would deal with them in the same manner, that he would expect the best from them, and yet at the same time would make the best of them, and would treat them as if they were the same perfect gentlemen that he himself always was.

THE HONEY BEE: THE NATURAL HISTORY, CULTURE, UTILITY, GEOGRAPHICAL DISTRIBUTION, AND COMMERCIAL VALUE.

By the Rev. T. SLEVAN, Poulton-le-Fylde, Lancashire.

[Addressed to the Members, at the Memorial Hall, Wednesday, February, 4th, 1891, at 7-30 p.m.]

THE great fire in London, by clearing away the nests of disease and death, thus making way for open streets, &c., did great good. So a fair and honest apology like mine may clear the ground and put me right with those who hear. To those present who may have given critical and scientific attention to this subject I have nothing to say. To those who stand on the border of this interesting wonderland in an inquiring spirit I have a little to say. I don't know much about bees. Well, the fact is, the man who knows most on this subject admits that he has but touched its border lines. What I have to say is not new, but true, and there is a sense in which what is true is new. My findings on this subject are the result of extensive reading, careful observation, and some practical experience. Like the bee, I have for years been gathering knowledge from every opening flower. And just as the bee gives a new character to the sweet nectar she gathers from every opening flower, so have I endeavoured to give to all I have heard and read the colour and strength of my own thought and experience. At the outset, let me say that I am greatly indebted to Mr. H. Carr, Newton Heath, Mr. W. B. Carr, of London, and specially to the two great kings of bee-keepers, Messrs. Cowan and Cheshire, and many another beside.

Poised one day on the crest of a North Sea wave, with the genial Secretary of the Manchester Geographical Society by my side, I made a rather rash promise. Whether I was too much excited by strong sea-breezes, or a too free use of toast and water, I can't tell, but I did promise that in return for a lecture on the Mediterranean delivered at Poulton I would come to Manchester and speak about bees. In anxiety ever since I feel sure that I have paid very dearly for my whistle. I would have retreated, but found the bridge burnt behind me. Like the man who rides a bicycle, I felt that I must either go on or go off. To go off and lick the dust would be unworthy of a north-countryman. So here I am to do my best, and leave the rest to critics. I have no serious intention of delivering a lecture, properly so called, but to talk familiarly so as to interest you in the honey bee, its history, culture, and utility; and, if possible, to so interest you that when you see a bee you may not feel it to be your duty to kill it, nor even to be afraid of it, but that when you sip the delicious honey, or burnish your chairs or light your room with wax, you may rejoice in its "sweetness and light."

Every man should have a hobby (not a fad). If he have not brains for a big one, then get a little one; but be careful that you do not ride it to death. Just take it out for a little trot now and then, just to secure a little healthy recreation as a relief from or preparation for the larger and more important duties of life. Not that I think the study and culture of the honey bee a little thing. The novice may so regard it, but as he intelligently advances he finds himself in the presence of the infinitely great. God and Nature are never so great and so grand as when we bend to examine what we in our ignorance call the infinitely little. Every jot and tittle of Hebrew writing is significant, so is every living organism, however small. The daisy has never been a little flower since Robert Burns apostrophised it. To the thoughtless and unobserving it is still but a daisy. You remember the words put into the mouth of Peter Bell by Wordsworth, that

> "A primrose by the river's brim
> A yellow primrose is to him,
> And it is nothing more."

To many people a beehive is only a skip or box of mysterious mischief, a point of danger, a thing to be dreaded. I want to make it more than that. Our old friend Adam had an early knowledge of the bee, to which he gave the name "Deborah," or one that speaketh. Speech is not always in words. Men speak with their eyes and by clever attitudes. In this case the tongue of the bee speaks in honeyed deeds, which are always more eloquent than honeyed words. In more than twenty books of the Bible we read of honey and wax. Old Jacob was a generous bee-master. Seeing his sons preparing to go down into Egypt he said, "Take the man (Joseph) of the best fruits of the land," and among other things a "little honey." In the Bible the highest style of living is connected with milk and honey. "With honey out of the rock will I satisfy you." The good time coming is described as a "land flowing with milk and honey." The only riddle in the Bible, and the oldest riddle in the world, is about honey, and in a queer hive, too. The most remarkable reference, however, is that the first and last food of Jesus Christ was honey. "Therefore the Lord himself shall give you a sign. A virgin shall bear a son, and his name shall be called Immanuel; butter and honey shall he eat, that he may know to refuse the evil and choose the good." To this day the Jews give honey to their new-born babes. After the Resurrection, "Have you here any meat? And they gave him a piece of boiled fish, and of an honeycomb, and he did eat before them." The earliest records testify to man's appreciation of the wisdom and value of bees. In Hindoo mythology, in representations of Persian worship, on coins of Athens and Ephesus, we find reference to the bee as a symbol of fecundity. It is figured in the Egyptian hieroglyphics as denoting a people obedient to a king. Virgil says, "The honey bee is a ray of divinity." Plutarch says, "The honey bee is a magazine of virtue." Quintillian calls her "the chief of geometricians;" and Dr. Montford says that "the honey bee surpasses in architecture the skill of Archimedes." The notice given to mead in the days of the Druids would lead us to believe that bees were domesticated by the Ancient Britons; but we have no authoritative information on this point, and the honey used in their drinks may have been collected by wild bees. The Romans when they came (A.D. 43) no doubt taught the Britons how to hive and domesticate bees. Mead was the ideal nectar of the Scandinavian nations, which they expected to quaff in heaven out of the skulls of their enemies; and, as may reasonably be supposed, the liquor which they exalted thus highly in their imaginary celestial banquets was not forgotten, as those which they really indulged in upon earth.

"Fill the honey'd bev'rage high,
Fill the skulls, 'tis Odin's cry!
Heard ye not the powerful call,
Thundering through the vaulted hall?
Fill the mead and spread the board,
Vassals of the grisly lord!
The feast begins, the skull goes round,
Laughter shouts—the shouts resound."

The King of Wales, about the year A.D. 490, made a code of laws relating to bees, fixing various prices of a hive at different seasons; and so highly was mead thought of 1,000 years ago that the mead-maker in the household of the Prince of Wales ranked next to the royal physician. The Anglo-Saxons of the earliest period were probably more anxious to domesticate bees than horses. Their produce was an article of food necessary to brewing of mead, and extensively used in medicine. In the sixth and seventh centuries bees were altogether wild (some think them wild yet). They swarmed in woods and formed their honeycombs in hollow trees, and were at first classed by law with foxes and otters, as incapable of private ownership, because they were always on the move. Anyone who found them had a right to the honey and wax, though from certain ecclesiastical regulations in the seventh and eighth centuries we may infer that their capture was a dangerous amusement, and that their half-naked captors had often a bad time of it. A favourite mode of taking them was to cut off the branch of a tree in which they had lodged themselves, taking care, of course, when sawing off the branch to sit on that part of the branch nearest the tree, then taking home their treasure. As the country grew in wealth and intelligence bee-keeping became more profitable. By the law of one Saxon king it was ruled that "every ten hides of land shall furnish ten vessels of honey." The clergy encouraged bee culture, teaching that the bees had been sent from heaven, because the mass of God could not be celebrated without wax. It has been said that man alone is capable of living in all lands, and of migrating freely to any portion of the globe; that each species of animal, as well as vegetable, has an organisation fitting it to the climate of a certain portion of the earth's surface, and that when they are removed from their natural districts they cease to exist, or, if the change is not too violent, they vary their habits so as to adapt themselves to their new conditions. For instance, if a fine-woolled sheep be taken to the torrid zone the wool is changed to hair. The dog of the tropics is naked. The elephant and the camel do not, as a rule, live long in temperate zones. The arctic bear and the lion cannot exchange places. Therefore to man alone has been attributed the power of inhabiting all climates; for, whether in the polar regions, where now and then mercury freezes, or in India, where at times the thermometer marks almost semi-boiling heat, his body maintains an equable temperature, his blood having (under ordinary circumstances) in all these places its natural warmth of 98° Fahrenheit. Man is not alone in his proud pre-eminence in this respect, for the honey bee, in an organised colony, during the working season, has the power of maintaining an equal temperature in the hive of 70°, regardless of the heat or cold outside, and, during the winter, of living in any climate with less protection than man. More: however short the summer, wherever vegetation blooms, it can gather its own food. So the bee belongs to all nations, climates, and men. The honey bee is one of the most fortunate of insects, for, unlike most of its class, having a practical "bearing," and sometimes a painful "bearing," it has obtained more attention from naturalists than even its interesting economy would have attracted, and repays, in a tangible form, the care that man has bestowed upon it for his own pleasure and profit.

There is a charm in modern bee-keeping which never existed when the hive was a sealed book and the bee supposed to possess two points of interest only, and those at its extremities—its tongue and its sting—which had nothing particular between them, to use the words of a humorous writer, save "skin and squash." Here the naturalist and the trader find a common point of interest. The hive is the home of the honey bee. On this point I have but few remarks to make. While David dwelt in a house of cedar he failed to feel comfortable when the Ark of God dwelt within curtains. The bee is the friend of man. Our interests are bound up together. Let us be as careful for the bee's comfort as for our own. It is true that hives gather no honey, but in so far as they effect the objects we have in view they are the cause of much being gathered. Environment and home comfort go for much among men; they are not less important among bees. Therefore, turning from the clay pipe of the Egyptian and the straw skip of the peasant, we direct our attention upon those modern inventions which have given to bee culture its high place among the industries and studies of this practical age. There is great difference between hives for bees and hives for the bee-keeper. Just step inside the hive, if you please; the accommodation is not large, but the work and workers are full of interest. There are three kinds of bees in the hive at certain seasons and two at others—the queen, the drone, and the worker. The queen is the mother of the hive, and the only mother. The drone is her royal consort. The worker is the neuter on whom there comes the honour and dignity of labour. The queen bee lays an egg, and in 24 days it becomes a worker bee. The same egg that produced a worker would by different feeding and environment in 16 days produce a queen. She lays an unfertilised egg, and in 25 days there comes forth a drone. The great charm of the hive is the queen. She is supposed to be the centre of influence and authority. She differs widely from those around her. While not so bulky as the drone her body is longer, and as it is tapering she has a waspish appearance. Her wings are much shorter than those of other bees, her colour is brighter, and her movements slow and matronly. No colony can long exist without her. She is treated with the greatest possible affection. Her dutiful children attend her every want. They back out of her way like so many courtiers as she moves about. Her shy and retiring disposition is a manifest disadvantage to the bee-keeper. When the hive is opened she hides among her children, preferring to be heard, not seen. She is a wonderful creature, sometimes laying as many as 2,000 eggs per day. Her wings are short, rendering her incapable of long and continuous flight; in fact, she seldom leaves the hive more than twice—first, when she goes off on her wedding tour; and, secondly, when she leaves the hive with a swarm in order to make room for a younger and more vigorous successor. Wonders multiply when you come to know more about this illustrious lady. A queen may be produced from a worker larva, when the larva is less than three days old. This is a great mystery. These royal scions simply receive a more abundant and sumptuous diet, and occupy a more comfortable home. Not only are the ovaries developed and filled with eggs, but the mouth organs, the wings, the legs, and the sting; yes, and even the size, form, and habits are all wondrously changed. That the development of parts should be hastened, and the size increased, is not so surprising, because it is well known that the kind and quality of food helps or retards growth in other insects; but that food should so essentially modify the structure, is certainly a rare and unique circumstance, hardly to be found except here and in related animals. The queen has a sting, but so far as at present known she never uses it, except in combat with another royal lady. Nature has evidently taught her that a common foe is unworthy of her steel. So then, when you have the chance, you may handle a queen bee as freely and fondly as you would a baby.

I come now to the drone—the father of the hive and the best-abused member of the bee community. "Big, fat, and burly, and studious of his ease," he is an ill-used bee. He appears in May, and often stays until November. The drone is shorter than the queen, being less than three-fourths of an inch in length. He is more robust than either the queen or the workers. He makes his presence felt by his loud humming noise. Mark, the beehive is not the only place where those who make the most noise do the least work! But does he do less work? Less certainly, but he is by no means the proverbial idle fellow he is often described to be. Inside the hive he helps to hatch the young by increasing the temperature of the hive. Outside his cheery song and well-to-do appearance gives to the hive an air of respectability. The drone has no sting and no pollen pockets, and no proboscis suitable for honey gathering. No wonder, then, that he is ill-used, for how can a utilitarian age like this think well of a member who has neither power to get, nor keep, nor fight? We have the best German authority for saying that the drone is the product of an unimpregnated egg. Many curious reasons, more or less reasonable, are given for the wholesale destruction of drones. One, and the most likely, is this: A check in the fine summer weather indicates famine. In view of this the cautious, far-seeing bees stay all proceedings likely to increase the population of the hive, and to be an unremunerative strain on the food supply. After all the drone has a merry life, though a short one. When the queen goes off on her marriage flight he is to the fore. The drone who follows the farthest, thus proving both his strength and his affection, is chosen as the royal consort. Alas! poor fellow, he never again regains the hive. Dr. Evans thus describes a drone:—

"Their short proboscis sips
No luscious nectar from the wild thyme's lips;
From the lime's leaf no amber drops they steal,
Nor bear their grooveless thighs the foodful meal;
On other's toil in pampered leisure thrive,
The lazy fathers of the industrious hive."

In a hive we have a population of from 15,000 to 40,000—one queen, 600 drones, the rest workers, emphatically "the bees."

The workers are of two kinds—small ones called sculpturers, and larger ones called waxworkers and outdoor labourers. The age of bees is always a subject of interest. Those hatched in the autumn will (with care) survive the winter and start the work in spring. Those reared in the spring wear out in three months. In the busy season few live more than thirty days—they usually die of nervous exhaustion. Bees never live through a year. One great secret of success is to get a strong stock of young bees in the autumn ; in the spring, to stimulate the queen to egg-laying, so that by the time flowers bloom there may be an army of workers ready to take the field.

I now come to the product of the hive, but not being learned in chemistry I can only say a little. Honey is the main point. Beekeeping has been called the grace of agriculture. Still, it has a very prosaic side. However poetic and romantic, we still look for "divy" in the shape of honey and wax. What is honey? A Chinaman called it the juice of bees.* Honey is not gathered, but made. It is first nectar, or sweet water, found on or in flowers, and containing cane sugar. Received by the bee it is changed into grape sugar, then an entirely new character is given to it by the bee, which differentiates it from all sugars. The short season and the quantity won is the great marvel.

Pollen is the dust of flowers, and is gathered to be the food of young bees. It is most needed where there is least to get. So we advise our friends to make artificial crocuses, and fill them with peameal or fine oatmeal, and place them in the garden where the bees may find them.

Wax is an important product of the hive. It is a solid, unctuous substance—a fat-like material. It is secreted by the bees, and may be seen in scales under the abdomen.

Comb Building: The bees first gorge themselves with honey, then hang themselves in festoons in a cluster, and by a swinging motion get up great excitement, the temperature rising to a great height. Then the wax exudes from the body, the bees disengaged come to the cooler part of the hive, the fatty substance sets in layers on the abdomen ; they then proceed to the place for comb building, and are relieved of their load.

The Sting: I have intentionally and appropriately left this until the last. It is what the Americans call the business end of a bee. Many have a very wholesome but needless dread of bees because they sting. Never go near in windy weather. Why? Bees think that you cause the disturbance. Nor in gloomy damp weather. Why? The bees are discouraged and ill-tempered. Always move quietly, firmly, and decidedly. People can get accustomed to stings. Keep calm, and the ill-effects are almost *nil.*

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* Aristotle believed that honey fell like dew from heaven, where it formed the food of the gods and of the industrious. Pliny calls it the juice of stars.

Lastly, its *Commercial Value:* The honey possibilities of this and other lands it is hardly possible to believe. In the United States we have 400,000 million of acres yielding 1lb. of honey per acre per year. In England alone, and without occupying a single bit of land useful for other purposes, it is said that one million fruit trees might be planted with marked advantage. Mark! the success or failure of such a planting depends more on bees than at first sight appears. The want of interest in bee culture renders fruit trees and clover crops less productive, and hundreds of tons of honey are annually wasted, for when honey is not gathered the flowers simply "waste their fragrance on the desert air." Scotland alone could maintain a sufficient number of bees to provide four million pounds of honey and one million pounds of wax each year. Our flowers will bear very favourable comparison with those of Russia and Hungary, and yet not a single mile from John o' Groats to Land's End is sufficiently stocked with bees. Why should the farmers of Lancashire complain of poverty when they allow all this land to waste? Let the nobleman with his miles of heather, the squire with his park and woods, the farmer with his bean and clover fields, and the cottager with his garden, all join together this rich harvest of good things. Bees are free roamers. They never trespass, for they have right of way everywhere, and are ever welcome. The German Government encourages bee culture in every way possible. Teachers paid by the State travel through the rural districts giving instruction on the best methods of bee culture. Schoolmasters before receiving their certificates must pass examination on this question. Bee clubs are common in the villages, money for prizes and expenses being freely and heartily given by the Government. Here, then, you have an illustration of the principle of the "three acres and a cow." The result of this fostering care is that Germans are the most skilled apiarians. With the German it is a science as well as a grace.

Let us all love bees. Mahomet made an exception in favour of bees when he condemned all flies to be killed. This love of bees made Napoleon prefer as a national emblem of industry the bee instead of an idle lily. The Athenians ranked the honey bee among their national blessings; and so should we, did we understand it rightly and care for it wisely by adopting rational methods of culture. When you see the busy bees in your garden do not kill the friend of man, but think of Him who made both them and you—think of the part they play in the economy of Nature, as high priests at the marriage festivals of flowers; remember their industry, their love of home, their bravery in the defence of it, their strict and zealous attention to the business of their lives, and the joyous hum with which they set about their daily task; their division of labour, and how willingly each one performs his allotted task, whether it be that of courtier in attendance on the queen, or, as Shakspere has it—

> "The singing masons building roofs of gold;
> The civil citizens kneading up the honey;
> The poor mechanic porters crowding their heavy burdens
> at the narrow gate."

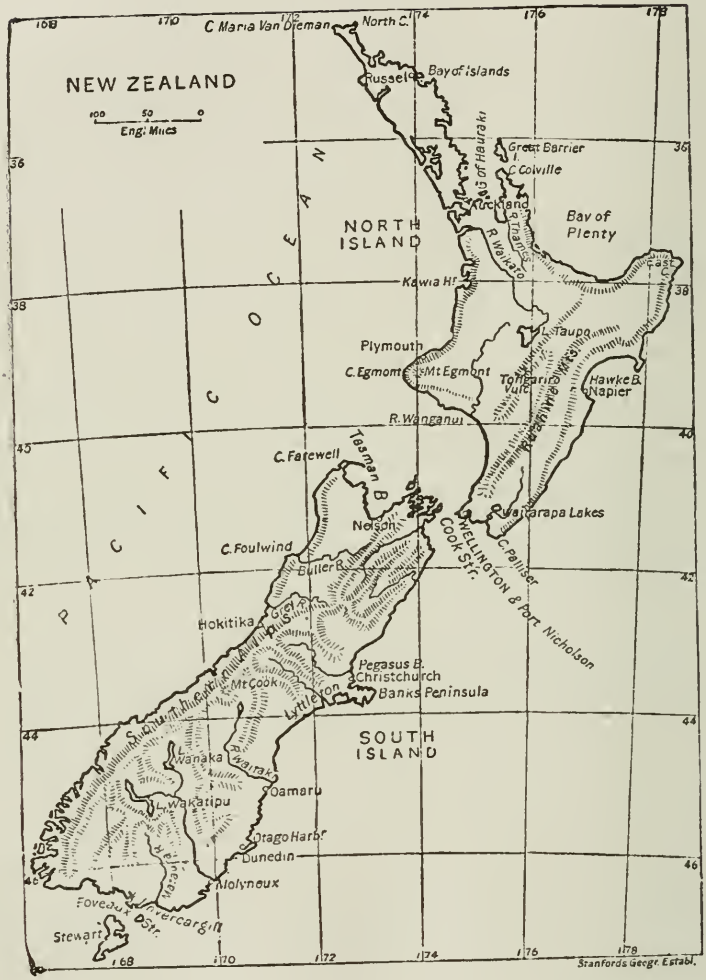
Is it not enough, think you, to excite the interest of the dullest minds when we consider that within so small a body should be contained apparatus for converting the "virtuous sweets" which it collects into one kind of nourishment for itself, another for the common brood, and a third for the royal lady of the happy home? More. Glue for its carpentry, wax for its cells, poison for its enemies, and honey for its master! Think! This little busy bee has a tongue almost as long as its body, which it can contract or lengthen at pleasure; and a sting so sharp, with a point 1,000 times finer than the finest needle you ever saw, and, more wonderful still, that that sting is a hollow tube! All these wonders in a body less than half an inch in length, and only two grains in weight! Well may our thoughts turn from Nature to Nature's God. Whether we contemplate the minute or the majestic in Nature we may exclaim—"Great and wondrous are thy works, Lord God Almighty; just and true are thy ways, thou King of Saints. Who shall not fear thee, O Lord, and glorify thy name?" "There is something better than honey, more to be desired than gold, yea, than much fine gold; sweeter also than honey in the comb."

Brehm's Zoological Atlas, classified in 55 sheets, folio. About 900 illustrations. Ruddiman Johnston and Co., Limited.—This is a selection of some sheets of the *Thierleben* of Brehm. The classification has been revised and the English popular names supplied. The pictures are very beautiful, and to anyone wishing to interest children in Natural History are very valuable. They are correctly drawn, and the relation of the picture to the size of the creature is indicated. This is one of the books which make it a delight to teach and a pleasure to learn something of the creatures, both tame and wild, inhabiting our globe. The book is not expensive.

A New Geography on the Comparative Method. With maps and diagrams. Fourth edition. 1890. 504pp. Index.

The British Empire: its Geography, Resources, Commerce, Land Ways, and Water Ways. By J. M. D. Meiklejohn, M.A. 336pp. and Index. Diagram maps marked in colours, the natural products, &c. 1891. Simpkin, Marshall and Co., London.

The comparative method is the only true method of teaching Geography, and Professor Meiklejohn, in these two volumes, gives us examples of the application of the method in a practical form. The diagram maps in the "British Empire" are very useful and valuable, and the books will be heartily welcomed. There are some things in the volumes which might be altered, but we are not concerned with little blemishes. We are concerned to welcome any attempts to make the study of Geography more interesting both to teachers and pupils, and these two books do that well. They are very well printed, and not too trying to the eyes.


NEW ZEALAND
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Eng. Miles
PACIFIC OCEAN
C. Maria Van Dieman
North C.
Bay of Islands
Russel
G. of Hauraki
Great Barrier I.
C. Colville
Auckland
R. Thames
R. Waikato
Bay of Plenty
NORTH ISLAND
Kawia Hr.
East C.
L. Taupo
Plymouth
C. Egmont
Mt Egmont
Tongariro Vulc.
Ruahine Mts.
Hawke B.
Napier
R. Wanganui
C. Farewell
Tasman B.
Nelson
Wairarapa Lakes
WELLINGTON & Port Nicholson
Cook Str.
C. Palliser
C. Foulwind
Buller R.
Grey R.
Hokitika
Southern Alps
Mt Cook
Pegasus B.
Christchurch
Banks Peninsula
Lyttleton
SOUTH ISLAND
L. Wanaka
R. Waitaki
Oamaru
L. Wakatipu
R. Mataura
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Dunedin
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Stanfords Geogr. Estabt.

THE NEW ZEALAND OF TO-DAY.

By Dr. J. MURRAY MOORE, M.D., F.R.G.S.

[Addressed to the Members, in the Memorial Hall, Friday, February 27th, 1891.]

ONE of the most cheering signs of the times in which we live is the fact that Old England is taking a particular interest in her Colonies, and that schemes of emigration, settlement, responsible self-government, and colonial federation are being formed and promoted by many good and true men carrying weight and influence amongst us.

The working-man is now " reading-up " the Colonies (aided by the excellent Emigration Bureau) and making himself better acquainted with our vast Transatlantic and Antipodean estates. The colonial-born all over the world call Britain " home," thus showing some domestic tie to the old country; and those of us who may be contemplating emigration ought to reciprocate that noble sentiment to the extent of preferring to live under the British flag rather than under the American or any foreign flag, all other things being equal.

After a dozen years of travel and residence abroad, during which I have been round the world, and have lived in the United States and then in New Zealand, I am convinced that Great Britain can maintain her ascendancy as " mistress of the seas " and her command of the world's markets only by a closer union or partnership, at first political and defensive, then commercial and fiscal, with those vigorous young nations which even now own a vaster extent of the Earth than was ever embraced by the greatest empires of antiquity. If we bear in mind that sparsely-peopled Canada and Australia are each almost as large as the United States, that the half-million square miles of South Africa hold less than three million people, and that New Zealand, small as it looks on the map, is but one-sixth less in area than our own islands, yet has but the population of Liverpool—we must conclude that surely there is plenty of room within our empire for the ever-growing surplus of our crowded millions.

Now, I hold that Colonial Federation is a necessary prelude to that grand idea of Imperial Federation which may be realised sooner than some of us dream of. Australian or Australasian federation is now coming almost within sight, since New Zealand has abandoned her attitude of reserve towards the movement, and has deputed two excellent representatives—Sir George Grey and Captain Russell—to take part in the Federal Convention at Sydney.

[Since this address was written the Convention has been held with great success and enthusiasm—" one people, one destiny," having been the prevailing sentiment. Most important resolutions were passed, for which see the London daily papers of March 3 to 14, greatly accelerating union among the colonies of Australasia.]

Imperial Federation would soon come within the sphere of practical politics if the following concessions, amongst others, were granted: The Agents-General of the self-governing colonies to have ex-officio seats in the House of Lords, and to be received at court on the footing of ambassadors; the Secretary for the Colonies to be always an ex-governor of considerable colonial experience; one member at least of the Judicial Committee of the Privy Council to be a colonial ex-Chief Justice; in the Church, colonial ordinations to be recognised as equal to those at home; and more inducements to be held out to the colonial-born to join both army and navy, whether as officers or as privates.

The new mail route across the North American continent, *viâ* the Canadian Pacific, to Australia, the Fijis, and New Zealand, will do much to promote the union of the Colonies, besides providing a safe access to the East in the time of war, should the Suez route be blocked. The tendency of the age is towards confederation, not disintegration, among the nations of the Caucasian race. Never let the narrow-minded economists persuade you, my fellow-countrymen, that our Colonies are but a source of embarrassment and expense to the old country. Quite the contrary is the case. In spite of "protective" tariffs (necessary to them for revenue), England absorbs more than two-thirds of all their trade; they provide an outlet for our surplus population, for the investment of capital, and for travel and exploration, bringing health and enjoyment to many; they afford valuable coaling and recruiting stations for our navy and commercial marine; they are loyal to our sovereign, and, as far as New Zealand is concerned, they are British to the backbone. The Colonies are a source of moral, physical, and political strength to us; and if wise and timely concessions are made by our statesmen and Legislature to reasonable colonial demands, as expressed by the Federal Conventions, the mistakes of the eighteenth will not be repeated in the nineteenth and twentieth centuries, and our children will see a Dominion of Australasia stretching out one hand across the Pacific to the Dominion of Canada, and the other across the Indian Ocean to a United British South Africa, thus encircling the globe with that grand old flag—

> "The flag that braved a thousand years
> The battle and the breeze."

Now to-night, with the help of a selection of views of its scenery and volcanic wonders, I shall try to interest you in the far-distant colony of New Zealand, and I hope that in the end I may even be able to infect my audience with some of my own exuberant enthusiasm for that grand country. Any advice I may incidentally give to the emigrant, invalid visitor, or tourist, must be considered as disinterested, seeing that, having completely "sold up" in order to settle at home in my native city of Liverpool, I do not now possess a foot of land nor a share in any company out there. My admiration for New Zealand is but a fitting tribute of gratitude to the climate which so completely restored my health; for the novel, pathetic, quaint, and varied phases of life I there met with; for the kindness and hospitality I and my family received during our nine years' sojourn; and for the many warm, true, and life-long friendships we there formed. It was with these feelings in my heart towards the colony that, after my return home, I endeavoured to set forth the claims of New Zealand as a world-sanatorium, and also as a desirable place of settlement for the emigrant, in a compact but comprehensive illustrated Handbook (published by Sampson Low and Co.), entitled "New Zealand for the Emigrant, Invalid, and Tourist," a synopsis of which is printed upon the small hand-maps kindly supplied this evening by the Council of this Society. In this work I have collected and condensed, not only the observations, experience, and conclusions of my own life in New Zealand—where I mixed freely, as a doctor naturally should do, with "all sorts and conditions of men," from the Governor down to the poorest emigrant—but also all the general information that the reader who stays at home would naturally expect to find in a Handbook about the colony. Each chapter completes its own subject, and a copious index (my own labour) enables anyone to find the precise information he wants, quickly. I have been abundantly satisfied with the kind reception the book has met with from reviewers, both at home and in New Zealand; and more especially am I pleased with the gratifying encomium pronounced upon it by Sir Andrew Clarke, Bart., who is our leading medical authority upon "Change of Climate."

GEOGRAPHICAL POSITION OF NEW ZEALAND.

A glance at the map of the Southern Hemisphere shows that the geographical position and extensive coast-line (3,000 miles) of New Zealand mark her out from Australia as the great maritime country of the Southern Pacific Ocean. Possessing at least eight good natural harbours (Whangaroa, Auckland, Kawhia, Raglan, Picton, Wellington, Lyttelton, and Akaroa), as well as several others (Napier, New Plymouth) being improved by the engineers; endowed with coal, iron, timber, abundant fresh water, and almost every known mineral that is useful to man, this colony seems by destiny the best fitted both for the coaling and naval depot for Australasia, and also for the central emporium where the manufactured goods of Europe and America will be (as they are now to some extent) distributed to the countless islands of the South Pacific.

Auckland, the most northerly of the four capitals, with the grandest harbour and largest dry-dock of the colony, lies about equidistant from Sydney (1,312 miles) and from Levuka in the Fijis (1,500 miles). It is 1,900 miles from Samoa, 3,900 from the Hawaiian Islands, and about 6,000 from San Francisco.

There were in 1889 no less than 140 steamships and 440 sailing vessels registered as belonging to New Zealand. The Union Steamship Company of New Zealand, which controls all the coastal and inter-colonial trade, owns more than 40 Clyde-built steamers, ranging from 3,500 tons downwards, all of which are models of speed, comfort, and elegance.

ROUTES TO NEW ZEALAND.

The quickest access to the colony is by steamer to New York, thence across the continent by the Union and Central Pacific Railways to San Francisco, whence every four weeks a large steamer leaves for Honolulu, Auckland, and Sydney. By travelling with the mails a passenger can actually reach Auckland on the thirty-fourth day after leaving Liverpool. But those who study health and wish to profit by the sea voyage should take one of the two lines of direct mail steamers which perform the transit from London, calling at Plymouth, Teneriffe, the Cape of Good Hope, and Hobart (Tasmania), in about 42 days. The refrigerating chambers on these vessels insure the epicurean traveller a wonderful choice of table luxuries all the year round; and the dangerous heat of the Red Sea is escaped by this route. The safety of the homeward route, *viâ* Cape Horn, is much promoted by the prohibition issued to the captains against going through the Strait of Magellan. Two other steamship lines—the Colonial and the Shire lines—send monthly boats to New Zealand, calling first at Melbourne or Sydney. The Peninsular and Oriental Company and the Orient Company carry through passengers for the colony, *viâ* the Suez Canal, and these are forwarded by the Union Steamship Company's steamers from Melbourne or Sydney—a transit of four or five days.

FIRST IMPRESSIONS.

The first thing that strikes the "new chum," as he is colonially called, from England, is the absence of apparent poverty, especially as displayed in our seaports by the crowds of ragged children touting for odd jobs or selling articles in the streets. A general air of prosperity, and a brisk business activity pervades both the seaports and the capitals—Auckland, Wellington, Christchurch, and Dunedin. He cannot fail, moreover, even if he arrives in winter, to be favourably impressed with the climate and the scenery; and as he becomes better acquainted with the country and its inhabitants, he is astonished at the great extent and variety of its resources, productions, and industries, and at the enterprising spirit of the people.

THE CLIMATE.

The climate is a temperate marine (and therefore humid) one, subiect, indeed, to sudden and sharp fluctuations, but free from great extremes of heat and cold. The colony comprises within its thirteen degrees of south latitude four distinct climatic zones, which I have been the first to describe and differentiate carefully (in the book above-mentioned), and which include atmospheric environments resembling those of Italy, Sicily, Switzerland, and England. There is a great prevalence of wind throughout the year, a feature of the climate which serves to keep the towns healthy. In sea-coast towns a day of Italian warmth and dryness may be followed by one of damp mist (warm, however) and rain suggestive of the west coast of Scotland. A brilliant sunny morning may be succeeded by a stormy deluge in the afternoon. But, on the other hand, there is only a difference of 23° between the averages of the coldest and the warmest months in the year, and the air is so mild that for two-thirds of the year a man may safely sleep without further shelter than that afforded by a blanket and a macintosh anywhere in the North Island. The atmospheric activity, caused by the all-surrounding nearness of the ocean—no inhabited place being more than 75 or 80 miles from the coast—and by the lofty mountain ranges, occasions a similar activity in the circulation of the blood in man and in his nervous system. Hence comes, in my belief, in great measure, the energy of the (white) New Zealanders, who in fifty years have developed their adopted country into its present highly-finished and even luxurious civilisation, though the population even now numbers only about 630,000—equal to that of Liverpool and suburbs. Although electric disturbances—summer lightning, for instance —are common throughout the year, thunderstorms are infrequent: in the districts of Auckland, Taranaki, and Hokitika they are rare. But minor earthquakes are frequent at Wellington, Nelson, Napier, less frequent in Christchurch and Dunedin, and very seldom so severe as to be destructive of buildings or of life. The great volcanic outburst at Tarawera, in June, 1886, of which I shall speak later on, was an event unparalleled in New Zealand history. The northern part of the North Island—namely, above the latitude of Tauranga on the east coast—is free from earthquakes. As compared with other British colonies and the United States, New Zealand possesses the great advantage of being free from tornadoes, hurricanes, blizzards, snowdrifts, droughts, malaria, locusts, and other plagues.

The great fertility of her soil, and its wonderful adaptiveness to the cultivation of all imported cereals, grasses, fruits, vegetables, shrubs and trees, New Zealand owes to her abundant rainfall, the average of which for the whole colony never fails, though locally it varies from 25in. per annum at Napier to 112in. at Hokitika. In fact, so well-watered is the country that it is calculated that no settlement is more than ten miles from a lake, river, creek, or spring of good fresh water. Thus, while Australia is languishing in drought—I have known a time when citizens of Sydney were paying sixpence per bucket for water, for example, and the sheep in New South Wales dying by tens of thousands from thirst and want of grass—New Zealand supplies her neighbours with plump cattle, excellent dairy produce, and potatoes and oats of splendid quality.

I found, as to weather, that the rainy or "cold season" in Auckland was more endurable than our uncertain and showery summers in England. As compensation for three days of continuous downpour we had a week or so of bright, dry, bracing weather, the wind having changed from the north-east, which is always accompanied by mist or rain, to the south-west, which is the coldest but dryest wind in New Zealand. In this favoured seaport the rain quickly evaporates from the surface of the soil where that is volcanic scoria, or percolates through to the numerous underground springs, or, if the surface soil is of clay, it forms for itself channels which from all parts carry the rainwater into the harbours.

Throughout the colony there are no hot steamy mists arising from swamps, marshes, or lagunes, as in Africa, New Guinea, and the Fijis, carrying up the malarious fevers into the homes of the settlers. Despite the variability I have admitted to exist, we had in Auckland, every spring, summer, and autumn, many consecutive weeks of sunshine, and even in winter many a day to which we could apply the poet's words—

"Sweet day, so cool, so calm, so bright,
The bridal of the earth and sky."

That the New Zealand climate is one of the healthiest in the world is proved by the following facts: The death-rate is very small, being, for 1888, only 9·43 per 1,000—exactly one-half the mortality of the whole of England and Wales. The birth-rate is large (38·5 per cent for 1887). There are 5·3 children to a family on an average, as against 4·16 in England; and the excess of births over deaths is actually nearly four times as great as in the old country—200 per cent as compared with 57 per cent. Old men and women whose wants are provided for live to greater ages than they would have obtained, judging from their family history and their own disease tendencies, in England. Once I attended a centenarian, 102 years old, who had lived a hard life of 40 years in the "bush," and another of my patients at 91 retained all his faculties bright and clear, and his caligraphy was wonderfully good.

Concerning the particular diseases alleviable or curable by this grand climate—this exhilarating compound of sunshine, sea-breezes, and mountain showers—and by the superb mineral springs (the richest in chemical composition in the world), this is not the occasion to descant. Two whole chapters (chapters v. and xii.) in my handbook are devoted to this subject. With my differentiation of the climatic zones of New Zealand before him, the invalid seeking a climate suitable for any form of chest disease will now, for the first time, be able to select his appropriate climate before starting.

In an interesting letter Sir Andrew Clarke observes: "I cannot doubt that an accurate and comprehensive account of New Zealand climates will be of great service to the public and to the profession. To intending colonists and invalids especially a book of the kind must prove of inexpressible value, not merely as a guide to seeking what is right, but . . . as a guide to showing what is wrong. Mistakes made by persons seeking climatic change in New Zealand are frequent; and I know of some which have been attended with the worst results." I will merely state that I can corroborate this eminent physician's latter sentence by many sad personal experiences. But I have known a large number of persons permanently delivered from bronchitis and inflamed throats, and several saved from consumption of the lungs, by a timely change to a well-selected spot in New Zealand. The sea voyage commences the amelioration, which the climate completes.

THE SCENERY.

The scenery (of which the illustrative lantern views shown this evening will give you some idea) includes the best features of Norway, Switzerland, the Tyrol, and Italy, set in a brilliant atmosphere resembling that of Greece. And, in addition, the North Island central volcanic zone displays terrific manifestations of plutonic energy—active volcanoes and solfataras, geysers of steam, water and mud, boiling springs, roaring "blow-holes," blue, green and yellow lakes, underground caverns, vast cliffs and terraces, built by Nature, of sinter, sulphur, lime or scoria, and other wonders, such as can only be paralleled in Iceland or in the less-accessible Yellowstone Park of Wyoming. The magnificent lake, river, forest, and mountain scenery of this colony deserves a Walter Scott to immortalise them in flowing verse;

a Ruskin to describe them in glowing prose; and the brush of a Turner or a Cox to depict them on canvas. The fascination exercised by Nature in New Zealand over the senses and imagination of artists who visit the colony lasts for a lifetime. Foiled, it may be, in his first attempts to portray the forms, colours, and exquisite atmospheric effects of some favourite "bit," the sensitive devotee of art returns to the district year after year in the endeavour to attain his ideal. Photography, also, nowhere in the world finds subjects more grand and striking. But what art has colours rich or varied enough to transfix on a picture the glory of the sunset rays falling on Mount Cook, on Mount Earnslaw, or on Mitre Peak? Come with me, in fancy, for a moment, to one of Earth's fairest scenes. We are camping out, let us say, at the edge of the Tasman glacier in the Middle Island. We are gazing entranced at the pure loveliness of the peak of Mount Cook, poetically called Aorangi, or "Sky Piercer," in the Maori language, shooting up far into the sky, clad in its mantle of virgin snow. As we look, lo! it blushes red in the splendour of the setting sun, while the side valleys become clothed in deep-blue shadow. What brush or pencil can fix on paper or canvas the unceasing play of colours? the wondrous purples of the summit deepening in the alpine after-glow? the dull greens of the forest? the sepia shadows in the ravines and hollows, growing ever darker as evening steals on? and, at last, the gradual fading away of all as the sun goes down, and over everything spreads the grey cloud-curtain of night?

Amid scenes like this the alpine traveller and the enterprising explorer will rejoice; and for the keen sportsman and angler there are even additional attractions provided by the successful science of acclimatisation, which has nowhere triumphed more than in New Zealand. One will now find some of the forests stocked with game familiar to him in Europe, and most of the rivers and lakes abounding in well-known fish. Pheasant, quail, partridge, blackcock, snipe, and teal have all taken kindly to their antipodean home, and breed in the same prolific way that the human race do out there. Salmon, trout, bass, carp, and perch have found a congenial habitat in various parts of the colony. Even deer-stalking and fox-hunting may now be enjoyed in the valleys north of Wellington. By a sensible law the fees for shooting and fishing licences go into the treasuries of the various provincial acclimatisation societies; and fines for shooting game in the prohibited "close season" also aid in defraying the expense of carrying on this very useful work.

New Zealand is now regarded as the holiday-ground of the Southern Pacific. Here the sun-baked Australian, the fever-weakened Anglo-Indian and planter from the Fijis, Sandwich Islands, or Tahiti, and others, find in the cool green shades of the ferny dells, or on the grassy lawns of delightful seaside resorts like Waiwera, perfect rest, refreshment, and reinvigoration.

PRODUCTIONS AND INDUSTRIES.

New Zealand is primarily a pastoral country. In May, 1890, there were over 16,200,000 sheep, nearly 774,000 horned cattle, and about 180,000 horses in the colony. In 1890 the export of wool was 101,000,000 pounds, valued at £4,172,226. The Hawera plains, in the North Island, are so excellent a pasture-ground for horses that Colonel Carré, of the War Office, has reported that the North Island of New Zealand is the best adapted of all the British colonies for breeding horses for the Indian army.

The trade in frozen meat—that is, entire, dressed, and trimmed carcases of sheep and oxen frozen in New Zealand, kept in that state during the voyage in special chambers, and landed in London or elsewhere in exactly the same condition—has in the short period of its existence, namely, eight years, attained vast proportions. It was in 1882 that I myself witnessed the shipment of about 3,000 frozen sheep to London by the ship Metaura. The greater part of these proved to be unfit for food on arrival in London, three months later. Increased knowledge corrected these failures so perfectly that the direct mail steamer Tainui, by which I returned, in September, 1888, to England, delivered 30,000 frozen sheep at Rio de Janeiro and at London, in perfect condition. Last year (1890) there were 32 large steamers engaged in this trade, and the value of frozen meat exported up to the end of June, and afloat, reached one million pounds sterling. Already, thanks to this beneficent traffic, our working man is able to provide meat for his family three or four times as often in the week as he could have done before this importation of a commodity so cheap in the colonies that both in Australia and New Zealand thousands of sheep are skinned and boiled down merely for tallow, their flesh being absolutely thrown away!

Secondly, New Zealand is an agricultural colony Both its wheat and oats are well known in the markets of the world for their very excellent quality and weight. The Hawke's Bay district grows, in some years, the high average of 37 bushels of wheat to the acre, and the Wellington district grows (1890) 36 bushels of oats to the acre. The total value of the cereals (wheat, oats, barley, and malt) exported during the year ending 30th June, 1889, was £970,659.

The forests of the colony afford millions of feet of most useful timber. The special timber of New Zealand is the kauri pine (*Dammara Australis*), which now grows only in the northern half of the North Island, and is becoming scarcer year by year.

Its tough, silky, durable wood, capable of taking a high polish, is much in demand for house-building, small sailing vessels, and furniture. Of this, besides other timber, the value of £176,608 was exported in 1889.

Kauri gum, which is greatly in demand in England and America for coach varnish, is another speciality of this colony. It is the amber-like gum-resin that has exuded in past ages from the kauri pine, and is found underground by digging beneath the sites of former kauri forests. In 1888 no less than £380,900 worth was exported.

The native flax or hemp (*Phormium tenax*), a plant which grows like a common weed throughout all damp places in the colony, is now so successfully manufactured into ropes, mats, twine, &c. (after many failures arising from the gummy nature of the leaf fibre), that its export has more than quadrupled in the last two years, the value of the export for 1889 having been £361,182. During that year there were 246 flax mills in operation, employing 4,804 hands.

Thirdly, New Zealand is a mining and manufacturing country. Gold is found in almost every district, though not always in paying quantities, and the Government tax of 2s. per ounce forms in some years a considerable item on the right side of the colonial Exchequer. Sometimes, as in a new goldfield I visited in the Coromandel district of the Thames peninsula, the gold deposit is so near the surface that fine grains of it can be picked out of the soil by hand; but a good deal of the gold in the North Island is found in hard and often refractory ores. Up to the end of 1889 no less than £44,000,000 in value of gold had been produced from New Zealand sources.

Silver, copper, quicksilver, antimony, and manganese are also found in various parts. Large deposits of tin have been lately discovered in the South or Stewart's Island.

Coal is abundant in New Zealand. From its 130 coal-mines are now turned out about 600,000 tons of good steam and household coal every year. Lignite and petroleum are also found in quantity.

Iron exists in immense quantities, in the curious form of titanic iron-sand (72 per cent of iron blended with titanium, mechanically mixed with 28 per cent of siliceous sand), along the shores of the Auckland and Taranaki districts, and in the common forms of hematite and chrome-iron ore in several places in the Middle Island. After proving an expensive *crux* to capitalists for years, at last, in 1889, Messrs. Minett and Jones succeeded in working this iron-sand into malleable bars.

Good building-stone is found everywhere; lime is abundant. A huge cliff of "Carrara" marble, 80 feet high, and of 800 acres in area, has been recently discovered near Nelson. I could enumerate quite a long list of other minerals and deposits of economic value, and fresh discoveries are continually being made. But capital, employed with intelligence and integrity, is much required for the development of these productions.

The Annual Industrial Exhibitions held in the four chief cities (Auckland, Wellington, Christchurch, and Dunedin) afford opportunities not given to many English towns for the display of new inventions, products, and newly-discovered materials for manufacture. The great number, variety, and good finish of articles of food and clothing, of carpets, woollen goods, and household matters, all made within the colony, astonish the stranger. So inventive are the New Zealand colonists, encouraged, as the inventor is, by the cheapness of the process of legal patenting, that the number of patents issued per head of the population exceeds that of the United States, though the Americans have hitherto been considered the most inventive nation in the world.

Great Britain sends two-thirds of the imports received by New Zealand, and receives more than two-thirds of her exports. In 1889 the total value of our trade with the colony was estimated at £10,725,000.

New Zealand has indeed been passing through a grievous financial and business depression since 1885; but now, under the wise and economical management of her affairs by Sir Harry Atkinson and his colleagues, her financial position is being righted, and confidence in her securities restored. In place of an annually-recurring deficit, the colonial Premier was enabled last year (1889-90) to announce an actual surplus of £115,000. The trade of the colony during the same period had so vigorously revived that the exports exceeded the imports by no less a sum than £3,500,000—always a good sign The revenue of New Zealand averages four millions a year, chiefly derived from excise and customs duties, the only direct Government tax being the property tax of one penny in the £ on everything one possesses above the sum of £500. Thus the working man escapes all direct taxation.

Possessing still above thirty million acres of land for sale or lease, 1,900 miles of railway, 5,000 miles of telegraph, 9,000 miles of road, 800 bridges, profitable postal and telephonic services, valuable public buildings, waterworks and harbour-works, having among its citizens (in 1889) 100,000 thrifty men and women, who possessed two and a half million pounds sterling in the Government and other savings banks, the colony of New Zealand is not only perfectly solvent but is now on the way to a prosperity more solid and lasting than that which Sir Julius Vogel forced upon her from 1870 to 1884 by the rapid and too lavish expenditure of borrowed money. I allude, of course, to the public works and immigration policy upon which that astute financier was floated into office in 1870, 1873, and 1876. The absolute necessaries of life—corn, meat, milk, eggs, &c.—are wholly untaxed, and the semi-necessaries, such as tea, coffee, cocoa, sugar, and salt, are but lightly taxed. Upon luxuries and all imported manufactures the tariff is heavy—from 15 to 25 per cent.

SOCIAL LIFE.

Social life in New Zealand is freer, less conventional, and more full of leisure and recreation than at home. The climate is conducive to outdoor sports, and the eight-hour day of labour allows so much leisure that the games of Old England are played with an ardour and persistence unknown to the toiling masses here. In Auckland alone, with a population, including suburbs and the other side of the Waitemata Harbour, of 60,000, we had no less than 50 clubs or associations for cricket, football, tennis, bowls, athletics, boating, yachting, and such like. The mayor of a town in New Zealand, being elected directly by the ratepayers (as in the United States), does not like to incur unpopularity by refusing a holiday or half-holiday on the occasion of a visit from an English or colonial cricket or football team, inconvenient though it often was in Auckland, when such a visit happened to fall upon the monthly "mail day."

There is much spontaneous and informal hospitality shown to strangers, and much inter-neighbourly good-fellowship. It is well for neighbours to live on good terms with one another, if only for one reason, and that is, the deplorable frequency of fires, for the towns are built of wood, as a rule. Of late years, American recreations have been introduced into New Zealand, such as roller-skating, moonlight riding parties, "surprises," calico balls, and so on. Nor am I acquainted with any country where "presentations" are so frequent and liberal.

New Zealand is emphatically a musical colony. Almost every house or cottage contains a piano, harmonium, or violin, and some performer upon one or other or all of these instruments. Some surprise and gratification was expressed by the Right Hon. Lord Sandhurst, who, in company with my friend, Chief Justice Way, of South Australia, called on me, *en passant*, at finding a number of Auckland youths practising Mendelssohn's part songs with me. He had thought that the public-houses and billiard-rooms would have absorbed their evenings. But there is a widespread desire for culture and self-improvement among young colonials, and I have always done my best to foster it. In Art, again, there is so much talent displayed in the pictures of amateurs shown at the Annual Art Exhibitions in the four chief cities, that I am certain that if ever Macaulay's New Zealander should sit upon a broken arch of London Bridge and sketch the ruins of St. Paul's, he would execute an uncommonly good drawing!

RELIGION.

Religion is not trammelled in New Zealand by the State endowment and establishment of any one church. All Protestant denominations co-operate with harmony in their work of providing for the spiritual and moral wants of the nation and the support of their poor. The bishops of the Episcopal Church of New Zealand, founded by that great and good man, Bishop Selwyn, are real working clergymen, and some of them are liberal enough to invite Nonconformists to preach in their churches. I need not trouble you with details of the census of religions, taken in 1886, further than to state that four-fifths, in round numbers, of the population were Protestants, and of these one-half were Episcopalians, one-fourth Presbyterians, and one-tenth Methodists.

EDUCATION.

The public education system upon which New Zealand prides herself, spending nearly £400,000 per annum upon it, is free, absolutely secular, compulsory, and of excellent quality. It has, in my humble opinion, but one blemish, and that is the total exclusion from all public schools of Bible reading and of any religious observance or instruction during school hours. As colonial parents are careless on this matter in their homes, and as denominational schools cannot exist in competition with the public free schools, the young colonials grow up regardless of any higher principle than their own advancement, profit, or pleasure, and develop that lawless spirit of what is termed "larrikinism," which will give (nay, is even now giving) serious trouble in the future. The school age is from 7 to 13 years. By an excellent system of graduated free scholarships, a clever boy or girl, even if the parents are very poor, may rise from a primary to a high school, and thence to the University College, where he can be trained for a degree, with little or no expense.

As the very numerous daily and weekly newspapers are read by every man, woman, and child, the New Zealanders are well informed on both local and imperial affairs. Their mental activity is shown by the amount of correspondence with Great Britain, America, and other parts of the world, the large demand for home literature, and so on, which, considering the smallness of the population, assume enormous dimensions. The reduction this year (1891) of the letter postage from sixpence to twopence halfpenny, for which the colonists have to thank Mr. Henniker-Heaton, the fluent advocate of "ocean penny postage," has been a successful move in binding the colony still closer to the old country. If I am addressing any parents who have sons out in New Zealand, I would urge upon them the great importance of writing often to their children, for a father's or mother's loving letter has the greatest influence, in many instances, in preventing a youth from going wrong.

CRIME.

While there is a good deal of rough street rowdyism, called "larrikinism," after dark, in the towns of the colony, there is not much serious crime in the colony, even among the Maoris, to whom, until thoroughly Christianised, *utu*, or revenge ("a life for a life," &c.) and *muru*, or plunder, in lieu of compensation, were legitimate and proper proceedings. For a full and accurate description of these customs, and of Maori life generally, I refer you to the "Old New Zealand" of Judge Maning.

A murder sends a thrill of horror throughout the whole colony. Though drunken assaults on women and children are not infrequent in New Zealand, they are not of every-day and unnoticed occurrence as in England. Five hundred policemen only keep the whole population, including the Maoris, spread over more than 100,000 square miles of country, in order, peace, and security to life and property. This proportion of one constable to 1,270 citizens contrasts rather strongly with our home arrangement, which gives one policeman to 571 persons.

RELIEF, PREVENTION, AND REGULATION OF POVERTY.

I do not wish my audience to conclude, from what I have stated, that there are no destitute poor in New Zealand. There are many poor invalids who have to make a living for themselves, many deserted wives with families, and many educated men who have lost their positions at home through intemperance or other vices. There are no workhouses or casual wards as yet, but for all really necessitous cases there is plenty of outdoor relief, wisely and kindly administered by Government officials, who work in co-operation with the benevolent societies of each city, and the hospital and charitable-aid boards of each county. Refuges are provided for the incurable sick and hopelessly infirm. There is nothing in New Zealand, thank God, at all approaching to the dense weight of pauperism ("the submerged tenth") which exists in Britain. In fact, there is no "pauper class" in the colony, and I devoutly hope that there never will be. "Work for all, and everyone able and willing to work," is the colonial motto. It is true that hundreds of families in the colony are just earning sufficient for the necessaries of life, and are unable to lay by for a rainy day, owing to the uncertain state of the labour-market, compulsory strikes, &c., but no man, woman, or child need starve in New Zealand so long as there are oysters on the rocks, fish in the sea, and kauri gum to be dug up from the ground.

THE LAWS.

The laws, which are modelled after those of England, with many additions and improvements, are both just and humane; and are administered by honest judges, impartially, to rich and poor alike. Litigation is more simple and less costly than at home. As far as Acts of Parliament can effect the purpose, New Zealanders are compelled to be honest, moral, and sober, legally. In fact, the New Zealand Houses of Parliament are sometimes accused of "grandmotherly legislation." But surely the Socialist reformer should be happy in New Zealand, for there every "point" in the charter and all the most advanced Liberal doctrines (except Free Trade) are carried into practice. Triennial parliaments, manhood suffrage, payment of all representatives, responsibility of ministers direct to the electors, and so forth, are all in full swing in New Zealand. Also you may marry the sister of your deceased wife (if it is any comfort to you!) in New Zealand.

TEMPERANCE.

This cause, under the leadership of my veteran friend and neighbour, Sir William Fox, in former years three times Premier of the colony, has gained greatly of late years in New Zealand. Local option is now in force over the whole colony, and I have myself witnessed the great improvement in the streets of Auckland, and the marked decrease in police offences since ten o'clock week-night and entire Sunday closing were adopted. As a striking proof of the increased sobriety of the citizens of this type of a New Zealand city, let me tell you the remarkable and gratifying fact that on the day after the general parliamentary election of November, 1890, there was not a single person brought up before the magistrates for intoxication. Life and limb are better protected, and property safer from thieves, than in many countries of much older settlement. Householders lock their doors and leave home for a day, two days, or even longer, and return to find everything safe and untouched. This trustful conduct would scarcely do in any English town. If a stranger dies in the colony without relations or friends, his effects are promptly and carefully taken charge of by the public trustee, who executes the will, if there is one, or, if the deceased died intestate, distributes the property to any persons who can prove their right of inheritance in any part of the world, the Government deducting merely five per cent for the expense.

The working man in New Zealand has abundant leisure for the cultivation of his garden-patch and the improvement of his mind. As a rule, he owns his own house and allotment. Mechanics' Institutes and Free Public Libraries abound in the colony, even in the smallest towns. The ideal of the Chartist—

Eight hours' work, eight hours' play,
Eight hours' sleep, and eight bob a day—

is even exceeded, for in some handicrafts the wages are nine and ten shillings a day. But it is to be remembered that just as "high interest" means "doubtful security," so "high wages" means "inconstant employment." There arises a break in the demand for a certain class of labour; and a man may have to leave wife, family, and home, and travel 500 or 600 miles to find a new job, or may have to journey to Australia to procure employment. The fares by sea are far too high, compared with our Atlantic fares, because of the monopoly of inter-colonial trade by the Union S.S. Co. Trades unions are powerful in the Australasian colonies, but somehow or other the employers generally triumph in the end by vigorous and intelligent co-operation. New Zealand offers a welcome, like the parent country, to all foreigners who conform to the laws. The children of Israel, concerning whom there is so much stir just now, are in good positions everywhere. But New Zealand, following the lead of her neighbours, draws the line at the Chinaman, upon whom she levies a tax of £10 when he enters the colony. This tax does not prevent the influx of Celestials, and market gardening, laundrywork, and the mining of certain poor districts (unremunerative to the European), are falling into their hands. But New Zealand ought not to be crowded with foreigners, whether Eastern or Western. This grand country is better adapted to the constitution, habits, and pursuits of Britons than any other Southern Pacific possession, and it is its glorious destiny, I hope and trust, to become the happy home of millions of our own race.

EMIGRATION.

As all assistance to emigrants on the part of the Government has ceased, on account of the enforced economy found requisite to rehabilitate its finances, the intending emigrant must very carefully ascertain what his prospects are of employment, and of taking up land, farming, &c., before he selects this colony as his new home. As I keep always in touch with the Agent-General for New Zealand (my friend Sir Francis Dillon Bell) and with the Emigrants' Information Office (31, Broadway, Westminster, S.W.), I am enabled to give the latest information on these points. The chief present requirement of this colony is for practical farmers with a capital of from £500 upward. The land laws are simple and excellent. My eighth chapter gives a summary of them. A man with £500 remaining after purchase of 100 acres of first-class land in a good agricultural district, say Taranaki, can comfortably clear, fence, and stock his farm, build a small house, and maintain his family until his produce was marketable. In poorer districts, such as Otago (interior) or Southland, a man could fairly start on 200 acres, with a capital of £300, if he took up the land on "deferred payment," by which he would become possessor at the end of ten years by paying 2s. per acre per annum, or a perpetual lease at 1s. per acre per annum. Thus a first experiment has been made in New Zealand, by this latter system, of land nationalisation.

There is now a good demand for sober, hard-working agricultural labourers in most districts of the colony. As the demand for special kinds of labour vary month by month, the quarterly circulars issued by the Emigration Office must be studied. But I am safe in stating that at the present time (June, 1891) there is a demand for bush-fellers in Taranaki and North Auckland, for miners in Otago, and for female domestic servants in all parts of the colony. How happy "Mary Jane" is, or may be, in New Zealand may be guessed by the comical way in which the following *bona-fide* advertisement from the *Auckland Evening Star* turns the tables upon mistresses: "Situation wanted—To take charge of a laundry or dairy. Advertiser can cook, and understands housekeeping. None but a *respectable* mistress, *who wishes to leave her servant in uninterrupted discharge of her duties, need apply!*" The wages of domestics range from two-thirds to two-and-a-half times the average English rates for the same kind of service.

There is no demand in New Zealand at present for clerks, shop assistants, or dressmakers. The clerical, legal, medical, and educational professions are fully stocked, only the highest appointments being filled up in England by the Agent-General. All employés in New Zealand have to work harder in the hours of labour, and to do a greater variety of things, than in England, where duties lie in grooves. But once he obtains a stable situation, the employé will have shorter hours of work, better pay, better food, more personal independence, and the speedier attainment of a home than he could have in this crowded old country. It is certain that Britain has too much population for her comfort, and that New Zealand has too little for her development. Capable as this colony is of sustaining twenty millions of people, its wonderful growth during its first half-century, and the energy and hopefulness of its inhabitants, inspire me with the belief that in the course of a generation New Zealand will be at the head of the new Australian Confederation.

The lecturer then proceeded to exhibit, describe, and explain the following views of New Zealand, selected from his collection: Map of the colony, showing the four climatic zones, as first described and differentiated by the author of "New Zealand for the Emigrant, &c." The Waitemata Harbour of Auckland. The city of Auckland, looking N.W. from Albert Park. The Free Public Library of Auckland, which cost £40.000, and has an annual income of £1,600. Portrait of Sir George Grey, K.C.B., the "G. O. M." of New Zealand, who has been Governor of the colony twice, and Premier once, and the founder of the free constitution of the colony in all its essential principles (1852). He is now (1891) in his 80th year, and by far the most impressive orator in New Zealand. The Auckland residence, built of concrete, of Sir William Fox, K.C.M.G., erstwhile Premier of the colony three times, now retired from politics, but an ardent leader of the Temperance movement, being president of the New Zealand Branch of the United Kingdom Alliance. The oldest stone (compact scoria) church in New Zealand, an object of interest as having been built by Bishop Selwyn and his assistants in early times, at Remuera, near Auckland. A settler's cottage in the forest of Waitakerei. The Nikau palm, the pith of which is edible, and other forest vegetation. A giant kauri pine tree, 120ft. high, and 47ft. in circumference. A "corduroy road" in the bush, made of stems of tree ferns and of ti-tree laid transversely across the path. The Falls of Waitakerei, 300ft. high, a lovely bush scene 20 miles from Auckland. The town of Devonport, on the north shore of the Waitemata, the favourite seaside residence of Auckland merchants. Hotel and hot springs of Waiwera, 30 miles north of Auckland. City of Napier (8,800 population), capital of Hawke's Bay district.

VOLCANIC SCENERY.

Dr. Moore showed a map of the volcanic zone of the North Island, covering 4,700 square miles of country, on which the following scenes and places are situated: Wairakei Geysers, near Lake Taupo; the Wai-o-tapu (Sacred River) Valley, showing mud volcanoes; the crater of Ngauruahoe, still active, 7,481 feet above sea level; Government Sanatorium at Lake Rotorua; Wairoa, before and after the eruption of Mount Tarawera, June 10th, 1886; the White and Pink Terraces (now destroyed); new craters of Rotomahana and Okaro; the Great Rift in Tarawera Mountain, and other phenomena of the great outbreak.

Having been requested by the Secretary to give some account of the Tarawera Eruption in the course of his lecture, Dr. Moore gave the following (condensed) exposition of that remarkable event: Geologists are nearly all agreed that the islands forming the colony of New Zealand have been upheaved from the bed of the ocean in Eocene times, but that the North Island has appeared above the surface rather later, perhaps during the tertiary period. One-third of its area consists of rhyolitic and basaltic rocks, and over a surface of 10,700 square miles we find blocks of pumice and of obsidian varying from a thousand cubic feet down to the size of a pea. It is within this area that all the remaining volcanic activities exist. Lake Taupo, a grand sheet of water, 35 miles across, 1,280 feet above sea level, doubtless covers the sites of several extinct craters, and is surrounded by the still-smoking Ngauruahoe, Ruapehu (8,878 feet), Tongariro, and five other extinct volcanoes at some distance. The long axis of this zone runs from N.E. to S.W., and it is in this direction that the earthquake waves run, and that the great rift in Tarawera and the country S.W. of the mountain was made by the outbreak which I shall describe. To show the immense volcanic activity that ages since existed north of this zone, I show you here a map of the isthmus of Auckland (a bird's-eye view), on which Dr. Hochstetter counted 63 distinct craters within ten miles of the city. When driving in the neighbourhood of Auckland, I was often struck with the hollow rumbling sound made by my carriage, marking the position of air caverns formed underneath the ridges of rapidly-cooled and solidified lava over which I was being driven. The very name of the volcanic island I showed you near Auckland Harbour, *Raugitoto*, means "bloody sky," whence it is just possible to deduce the theory that some manifestations may have taken place there in far-back times when the Maoris first arrived in New Zealand. But strict geological laws are against this supposition, and the name may have been brought from their primitive seat by the Maoris, and given to the island which most nearly resembled the original in that distant group from whence they came. Be this as it may, there is no district in the whole colony so free from seismic and volcanic disturbances of any kind as that which extends from Papakura and Drury northward to Cape Reinga.

Mount Tarawera (3,650ft.), on the eastern shore of the lake of that name, is of igneous origin, but possessed no trace of a crater previous to the day of the eruption. I passed the mountain in 1880, when visiting these exquisite terraces I now show you, and noticed that it resembled Table Mountain at the Cape of Good Hope. Two Maori settlements, Te Ariki and Te Moura, nestled at its foot, and the small Lake Rotomahana, on the borders of which the terraces of sinter had been formed, was about a mile from the nearest part of its broad base. The village of Wairoa is about four miles from its summit, and the half-European, half-Maori town of Ohinemutu is distant sixteen miles. Suddenly, without any definite premonitory signs, at 2 a.m. on the 10th June, 1886, amid earthquakes, a roaring noise, and a tempest of wind, three enormous columns of fire and smoke shot up from the flat summit of Tarawera, and in an hour three conical craters were formed—Wahanga, Ruawahia, and Tarawera, each 130 to 150 feet in height. Eye-witnesses tell me that it was the most awful sight they had seen, or ever expect to see, on this side of eternity. Fireballs in great numbers were shot out of these craters to an immense height, and descended on the Maori settlements and on Wairoa, killing some inhabitants and setting the grass huts of others, called *whares*, on fire. In a short time the volcanic dust, which in enormous quantities had been projected into the air, fell in the form of mud, overwhelming Wairoa, and covering the country for many square miles round with a layer of from one to six feet deep. By these destructive agencies of the eruption, 111 lives—105 Maoris and 6 Europeans—were lost. Here you see, in the views of Wairoa before and after the eruption, what terrible damage was caused. It was in the fall of Macrae's Hotel that young Edwin Bainbridge, a tourist from Newcastle-on-Tyne, was killed. From one of the native huts an old priest, or *tohunga*, of the Maoris, aged 104 years, was dug out, alive, after four days' entombment. He died in the hospital shortly afterwards. The ruins of the schoolmaster's house, where Mr. Haszard and three of his children perished, Mrs. Haszard escaping most miraculously, form a melancholy reminiscence of that good man, whose noble gospel and temperance work among the natives will last for eternity. In the physical features of the country S.W. of Tarawera Mountain great and permanent changes took place. The Terraces utterly disappeared from view. Lake Rotomahana was converted into an immense steam geyser, and a rift in the side of Mount Tarawera, extending through this crater, runs S.W. for nine miles, varying in width from a furlong to 1½ mile, and in depth from 300 to 900 feet. The mud and pumiceous sand were by the winter's rains of July and August, 1886, washed into the ground, or into the rivers, the result being that, though for the first two or three weeks hundreds of cattle and sheep perished from being deprived of grass, in the following spring there was better pasture than before on the poorer land. We in Auckland, 140 miles distant, distinctly heard the explosive noises of the eruption, and three days later actually saw the black cloud of ashes in the sky, which was carried up to a calculated height of 44,700 feet, and spread in all directions by the winds and clouds. Had the Tarawera eruption occurred in summer, there would have been a terrible loss of life among the visitors, who in ever-increasing numbers, year by year, had made the tour of the terraces, geysers, and other volcanic wonders.

The Middle Island is devoid of volcanic but not of seismic manifestations, for, though the only traces of the former are found in the hot springs of Hanmer Plains and at Sumner Lake, the earthquakes occur too frequently to be pleasant in Nelson, Christchurch, Dunedin, and Invercargill. The rocks of this island and of the South or Stewart's Island consist of gneiss, granite, quartzite, clay, slate, micaceous schists, and, speaking generally, of older formations than those of the North. Coal beds are found in all the islands, the most extensive being on the west coast of Middle Island, at Westport, Greymouth, and Hokitita.

Dr. Moore then exhibited some Maori portraits—"King" Tawhiao, Chiefs Wi Marsh, Kawiti, and others. Also Te Kooti's house, with native-carved posts, rafters, and a totem on the gable end; Maori girls in European dress; the Maori "capital," Parihaka, at the foot of Mount Egmont, in Taranaki. The scenes in the "King," or till lately disaffected, country selected were—the Waitomo Stalactite Caves, near Otorohauga, and the exquisitely lovely Falls of Te Kakahi, on the Upper Wanganui River.

The Main Trunk Railway of the North Island will open up much wild and romantic scenery to the tourist, and tap some valuable mineral deposits and coal-beds. It is now the one great public work left unfinished, for the want of funds, in the North Island. The Manawatu Gorge, the prettiest valley of the North Island, through which the last link of rail connecting Napier with New Plymouth and Wellington will run. Views of the cities of Wellington, Christchurch, and Dunedin; of Lake Wakatipu, the largest lake of the Middle Island; of Mount Earnslaw (9,100ft.); and of the West Coast Sounds—Dusky Sound, George Sound, and the culminating glory of all of them, Milford Sound (seven views)—concluded the address.

Thacker's Reduced Survey Map of India. By J. G. Bartholomew, F.R.G.S. With Index. 1891. W. Thacker and Co., London; Thacker, Spink and Co.s Calcutta.—This is an accurate reduction of the Ordnance Survey of India to the scale of 69 miles to an inch. The map has been corrected to date; political and other changes are shown; the last frontier and geographic surveys have been used. The spelling of the place names is according to Sir W. W. Hunter's system in his "Imperial Gazetteer." There are about 10,000 names on the map, and their places are indicated in the Index. There are several inset maps.

Uncrowded Atlas. By T. Ruddiman Johnston, F.R.G.S. Standards II., III., IV., V., VI., VII. Price from 3d. to 6d. each.

Bible Atlas. By T. Ruddiman Johnson, F.R.G.S. 19 maps and pictures of Tabernacle. 6d. Published by Ruddiman Johnston and Co. Limited.

The Indian Popular Atlas. 24 coloured maps and 2 diagrams. Six of these maps are of portions of India, and the atlas is largely used in India. 1s. W. Collins and Son, London.

The Uncrowded Atlases are capital. With broad effects they are just the thing wanted for young children, giving the main facts without troubling them with minute details. The Bible Atlas is useful. The Indian Atlas is capital. It also is not overcrowded with names; the printing is very clear, and the maps of India are remarkably well done for a cheap atlas.

SECRET SOCIETIES IN CHINA.

By Mr. F. H. BALFOUR.

[Addressed to the Members, in the Memorial Hall, Wednesday, March 4th, 1891, at 7-30 p.m.]

I CRAVE permission to begin my paper this evening with an expression of regret. I cannot help feeling sorry that, with such a subject as the one before us, you will not enjoy the advantage of being addressed by one of the two or three scholars now in China who possess almost a monopoly of all that is known about it. The gentlemen I refer to have acquired their experience from long-continued personal familiarity with the members of secret societies themselves, and that not in the semi-foreign treaty ports, but far away in the interior, principally, I believe, in the province of Shantung, where they have had the best possible opportunities of gaining the confidence of the Chinese and obtaining an insight into the mysteries of their social and domestic life. These are advantages to which I can, unfortunately, make but slender claim, and the most I can hope to do this evening is so to excite your interest in the curious phenomenon about which I have, perhaps presumptuously, undertaken to speak, that you may deem it worth your while, on some future occasion, to seek fuller, trustworthier, and more recent details respecting it from the experts to whom I have referred.

Now it is a well-known fact that there are a large number of secret societies in China, which exert considerable influence upon all who are in any way connected with them, and are regarded with much suspicion and distrust by the Government. The fact of the T'ai-p'ing rebellion having had its origin in a religious movement causes the authorities to be very jealous of any sect or congregation of men professing doctrines at variance with the recognised creeds known as Confucianism, Buddhism, and Taoism. The existence of such schismatics is a source of real and constant anxiety to the Government, and is considered, with or without just cause, dangerous to the general peace and welfare of the Empire. The societies, in point of fact, exist throughout the length and breadth of the land, and date from an epoch long prior to the amalgamation of the country under a single Crown. The secrecy of their operations, which, of course, forms the principal barrier to inquiry, is no less remarkable for the stringency of its observance than for the success which its inviolable nature insures whenever any widespread political movement has been brought about. Their name is practically legion; but whether they are all separate and independent associations, or merely ramifications of one great body, has, I believe, never been accurately ascertained. For our present purpose, however, they may be roughly divided into two categories—the political and the quasi-religious. Both are infused with mysticism—in some cases attractive enough, in others degenerating into the most paltry hocus-pocus; so that, while the tenets of any given political sect are sure to be "veiled in allegory and illustrated by symbols," it would be a great mistake to see a political conspiracy in every association of religious or quasi-religious sectaries. The Government, however, wages war against all alike. Men who are not satisfied with the teachings of Confucius must have something wrong about them; they form a disturbing element in the body politic; and their revolt against a system of ethics that has held sway in China for at least 4,000 years—for Confucius was only a transmitter, not an originator—is held to presuppose a tendency to revolt against the powers of whom Confucius was himself a loyal and consistent supporter. Besides, the Master denounced the study of strange doctrines as "injurious indeed," and this one sentence from the Analects is constantly appealed to as authority for the persecution of the sects. "He is no disciple of mine; my little children, beat the drum and assail him," said Confucius on another occasion; and this, I may remark, has actually been appealed to by the ringleader of a mob in justification of a raid upon the premises of a European missionary. We need not, then, be surprised at what we find upon this point in the Penal Code. The clause I refer to denounces magicians who raise evil spirits by means of magical books and dire imprecations, leaders of corrupt and impious sects, and members of all superstitious associations in general. All are held offenders against the laws by their diabolical doctrines and practices. The leaders of such societies are liable to death by strangulation, while all persons who, without being related or connected by intermarriage, establish a brotherhood or association among themselves by the ceremonial of tasting blood or burning incense, shall be held guilty of an intent to commit the crime of rebellion.

I will now give a few particulars of some of the more important of the proscribed sects, and in doing this I shall be compelled to have more or less recourse to my own published writings on the subject. We will begin with the great political confederacy, the most formidable and widespread, perhaps, of any, known as the T'ien Ti, and sometimes as the San Ho, Hui the Heaven-and-Earth, or Triad, Society. This may fairly claim to rank with the ancient craft of Freemasonry in the west, in point of power and extensiveness; while there are so many features of similarity, and such striking analogies between the two as to afford strong evidence in favour of the belief of certain writers that the two systems had a common origin. For not only is the highest antiquity claimed for the Triad Society by its members, but everything that is known about it goes to prove that its political and revolutionary character is of a recent and accidental nature. The mystic doctrines it embodies are cosmogonical and moral; but these, if we understand the matter aright, have undergone important modification during the last two hundred years, and been twisted into concrete forms foreign to their primary significance. It is scarcely to be expected that within the limits of such a paper as this I should attempt to enter upon an elaborate analysis of so obscure a subject; but there are a few salient features about it which are sufficiently interesting to deserve notice, both as regards the close relationship of the occult doctrine with the principles of the Masonic craft, and its subsequent development in the direction of political conspiracy.

As I have already remarked, the society bears two names. It is sometimes known as the Society of Heaven and Earth, and sometimes as the San Ho sect; and it is in the second designation that a certain difficulty has arisen. The fact is that the sound *ho* is frequently represented by the character for river, and the phrase, as thus written, is said to be simply the name of the place where the league is said to have originated. But this is the league in its lesser and more popular sense—the Hsiao Hui, or Petty League, as it is called. The Greater League, which is contained in the principle of Heaven, is written with the character for harmony, and refers to the Three-fold Harmony formed by Heaven, Earth, and Man, from which the sect derives its other designation. The more esoteric teachings of the faith are intimately allied with those of the earliest philosophers, both Indian and Chinese, and deal almost exclusively with the generation of the Cosmos. The mystic union of the three great forms or principles of being is expressed by the Masonic symbol of a triangle, which, according to the analysis we find in the standard Chinese etymological dictionary, consists of the character *ju*—to enter or penetrate (forming the two sides)—and the character *i*—one (forming the base)—the combination of the two in the perfect triangle meaning, therefore, Three Blended into One. The object of the cult was, primarily, the discovery of the pure light—Ming—or truth. And here again we are curiously reminded of Freemasonry. In details, however, the resemblance is still more striking; and I beg your attention to the following catechism, which is regularly rehearsed at the opening of a Triad lodge. It is translated from one of the authorised books of the League, and quoted by Gustav Schlegel:—

> How high, brother, is the lodge?—As high as one's eyes can reach.
>
> How broad, brother?—As broad as the two capitals and thirteen provinces (the whole empire—the world).
>
> Whence come you, brother?—I come from the East.
>
> At what time did you come hither?—I came at sunrise, when the East was light.
>
> Whither are you bound?—I wish to go where I can join the myriad brethren.

The lodge is square, and perfectly oriented; while the East, as a source of light, is sacred. On entering the lodge the candidate is received at the point of a sword, directed against his uncovered breast, and is dressed in linen or cotton clothes of white. He has to take thirty-six oaths in all, and to undergo the ceremony known as Crossing the Bridge—in other words, of passing under an arch of steel formed of crossed swords; while at a certain stage of the proceedings a cock's head is cut off, with the imprecation—"Thus perish all who betray our mysteries."

It was in or about the year 1630—just before the revolution which resulted in the fall of the Ming dynasty and the accession of the Manchus—that the T'ien Ti Hui assumed a political character. A century later, during the reign of Yûng Chêng, the vigilance of the authorities was aroused, and the members were compelled to exercise the utmost caution; while in the reign of Kia King their activity became so alarming that a systematic movement was set on foot against them, no fewer than three thousand initiates having been captured by the Governor of Canton alone. All through these vicissitudes, however, they retained a most elaborate code—pages upon pages long—of secret signs, whereby to recognise each other wherever they might meet. They continued to hold lodges by night, performing their peculiar ceremonies, and initiating candidates under oaths of the most solemn character. These conclaves were held for some time in deserted places, the approaches to the scene of action being defended by artificial pitfalls, concealed under light wickerwork, and covered with sod and leaves so that any would-be intruders could not avoid falling into the trap. The mysteries celebrated by this strange cabal are said to open with a rather riotous feast, accompanied by music, after which the brethren range themselves in front of an idol, the Master occupying a lofty chair, supported by eight men with naked swords A large amount of paper seems to be burnt by way of propitiatory sacrifice in the course of the rites which ensue, in which the candidate for initiation bears a prominent part. Stripped to the skin, with the exception of a pair of trousers, he is then brought forward, and, kneeling with the eight swords resting on his neck, his examination is commenced. The first question is as to his identity and birthplace; the second as to his parentage; while to the inquiry, "Are your parents alive or dead?" the answer is, under any circumstances, "Dead," as all members of the society are supposed to be free from every earthly tie. Various other test-questions are then put, the answers to which are sometimes flatly contradicted by the Master, who compels the candidate to confirm his statement by an oath. Finally, the vow of secrecy is taken, under the mystical emblem of drinking blood; but, happily for the candidate, this most disagreeable part of the ceremony only consists in swallowing a cupful of wine, or arrac, into which a few drops of blood have been let from his own finger. The business of the evening is then brought to a close by the Master commanding the novice to apply on the morrow to the secretary of the lodge, who will give him a book containing all the secret signs, passwords, and marks of mutual recognition by dress and habits of eating, for which he will be charged a moderate sum.

Such are the ceremonies of initiation practised by one branch, at least, of the Triad Society; and the question, how far they present any analogy to the corresponding rites of Freemasonry, is one that can be answered for himself by any Mason who may happen to be present here to-night.

I have said that it was with the establishment of the reigning Manchu dynasty—the Tsing—that the T'ien Ti Hui assumed a political character. The watchword seems then to have been adopted, Fang Tsing Fu Ming—"Overthrow the Tsings and restore the Mings"—the Chinese dynasty which preceded the one now in power. Ming Ch'ao, or the Reign of Light, had, up till then, been held to express the pure object of the brethren's worship; but now it assumed a more materialistic sense, for Ming Ch'ao also means the Dynasty of Ming, the characters, used in either sense, being exactly the same. Under the *double entendre* conveyed in the formula Ming Ch'ao, the members engaged in the most desperate endeavours to overthrow the power of the Emperor and restore the deposed family, and, with this end in view, they associated themselves with Hung Hsiu-chüan, and made common cause with the T'ai-p'ings. Indeed, Schlegel holds that the T'ai-p'ing rebellion sprang immediately from the brethren of the Threefold Bond, the leader himself being a member of the league; but whether this is true or not, we know that the Triadists took an active part in the rebellion, that they were constantly mistaken for the T'ai-p'ings, and that it was they who stormed Shanghai. The mystical ideas imbibed by Hung Hsiu-chüan were supplemented by still more daring speculations, drawn from an imperfect view of Christianity. The very designation T'ai-p'ing, so far from symbolising the spread of gospel-peace, was already in vogue among the Triadists in the sense of "equality," and the lodges in which they met were called T'ai-p'ing Ti, or Land where All are Equal. According to this writer, who has done good service by translating several important secret handbooks which came into his possession, the eight Wangs, or princes, of the T'ai-p'ing hierarchy, were themselves simply Grand Masters of the Order. This, of course, is a conjecture merely, and may or may not be true. I do not myself think that there is very much evidence in its favour. What is certain, however, is that the doctrines of the T'ien Ti Hui may be traced back to very ancient times; that the political character of the sect is an entirely modern innovation; that, primarily, the points of resemblance between some of its features and those of Masonry are numerous enough to justify the suspicion that the two may have had a common origin; and that, at the present moment, the Triad Society is believed to be active and as powerful as ever.

Another very formidable and well-known society is that which has adopted as its badge the White Lily, or Lotus, under which designation it has achieved no small amount of notoriety. This fraternity is said to have arisen during the reign of Kien Lung of the present dynasty; and during the sovereignty of his successor, Kia King, there is no doubt that it assumed very formidable proportions. The rules of the Order are very strict. All the members are supposed to live on *sû-ts'ai*, answering to the French word *maigre* as applied to diet, being rigid vegetarians. The sect is further said to possess a common fund of immense wealth, contributed to by every member of it, and both men and women are admitted. At the period I am now speaking of, the Grand Master of the Order was a man of the name of Fang Yung-shên, whose wife, known as Ma Erh Ku-niang, or the second Miss Ma, was celebrated no less for her enormous physical strength and stature than for her remarkable mental energy. The headquarters of the conspirators were at Nanking, and it was during the leadership of this well-assorted couple that an extensive plot was hatched to blow up the Imperial Palace at Peking. Their plans were laid to perfection. No suspicions were raised by any carelessness or laxity of speech or manner on the part of the initiated, numerous though they were. But at the very moment of their triumph, almost as the torch was to be applied—darkness favouring their design—a violent storm of wind and rain came on suddenly and disorganised all the arrangements. The alarm was given and the palace saved. This was the signal for a crusade against the sect, and the Viceroy of Nanking was foremost in his exertions to crush the nuisance. Some sharp fighting ensued, and the Viceroy's forces eventually succeeded, though after a terrible struggle, in capturing Fang himself, together with a number of his confederates.

What became of the lady I don't know; but the treatment of the prisoners by the authorities was so strange as to be almost incredible. It is gravely stated that they were offered their lives and further mitigations of their penalty if only they would consent to eat meat. This Fang, the leader, valiantly refused to do, and he was executed accordingly. Others of the confederation acceded, but, it is said, suffered a far more horrible death at the hands of the society afterwards. Ever since these reverses the sect has been much less dangerous. The hot chase made after its members by the authorities has even induced them to renounce their designation, and to adopt the substitute-title of the Do-nothing, or Inactive, sect. But the fraternity still exists, and, what is more, the Chinese dread its influence greatly. They believe the members to be in possession of magical powers, and the celebrated paper-man scare, of which more anon, is said to have been attributable to their incantations. Meanwhile the most interesting speculation connected with this body is, What lies at the root of their mysteries? Is their object purely political, in pursuance of which they practise upon the credulity of the masses, or is there some deep ethical and religious feeling at the bottom of it all? Both elements are visible. One of the most extravagant pranks, confined however to the leaders of the sect, consists of holding the breath on special occasions long enough for a man to eat two meals of rice. They get black in the face and perfectly rigid. In the meantime the soul is supposed to leave the body, and go about collecting information of a more or less miscellaneous kind. When the trance is over it comes back; the breath returns, and the revelation is made. A man once failed to recall his errant soul, and died—a mishap which produced much disruption among the members. The stringency of their moral regimen is certainly in favour of their being genuine mystics, who prefer death to breaking their vows of abstinence; while the political character of the association is illustrated with equal cogency by the fact that its organisation is carried on in the strictest political form, the members assuming the ranks and titles of regularly appointed officials, and being bound by a code of laws as stringently enforced as that of any recognised community.

A word now about the paper-man scare, which is fresh in the memory of anybody who happened to be in China fifteen years ago. The first scare of the sort broke out at Ningpo, in 1846, during the reign of Tao Kuang, and caused confusion indescribable. The air was believed to be full of evil spirits, under the form of men cut out of red paper, no fewer than three thousand of them haunting the city at one time. The Chinese, mad with fright, banged gongs to drive them off—a most logical and philosophical proceeding, for evil spirits belong to the *Yin*, or Principle of Darkness, while the sound of brass comes under the influence of the *Yang*, or Principle of Light, the two being as mutually antagonistic as fire and water, or alkali and acid. Earthquakes and a brilliant shooting-star increased the prevailing consternation, and there were some who attributed the portents to the spirits of the British and Chinese soldiers slain in the recent war, who were fighting their battles over again in mid-air. Just thirty years afterwards the same terror broke out for the second time, but in an acuter form. The paper-sprite was abroad again, and this time his malignity showed itself in cutting off people's queues. A perfect panic prevailed in the principal cities of Chêkiang and Kiangsu, and spread rapidly. When first the rumour arose it was simply laughed at. But very soon the cry came from Nanking, Soochow, Shanghai, Ningpo, Hangchow, and the surrounding districts, and it proved to be no fable. Whole provinces, at last, seemed to go mad. Men and boys suddenly found themselves *minus* their cherished tails, and the strange occurrence admitted apparently of no explanation. Asleep, awake, alone, in their own houses, out of doors—under all conceivable circumstances—the mysterious influence reached them. Europeans affirm that they have themselves seen a Chinaman's tail—which is on the average as thick and strong as a moderate-sized rope—drop off suddenly, without any apparent agency. The victims were nearly beside themselves, and for weeks every man wore his appendage either over his shoulder in front, or twisted round his head, or tucked into the back of his coat, for safety. Of course, the phenomenon was regarded as supernatural, and was generally attributed to a paper-sprite—sometimes in the shape of a man, sometimes as a pair of scissors, cut in red paper, and endowed with diabolical powers by a gang of necromancers. A large business was done in paper-charms, which were sold at all the shops, and carefully worn about the person to ward off the evil spirit. One talismanic sentence ran thus: *Wa nan tsa ch'ih hûng*, which is the Chinese transliteration of the Sanscrit *Vi namati sata hûm* ("He bows down before the hundred *hûm*"), a word of which I regret I do not know the meaning. Another, written in a grotesque and clumsy cypher, was to the following effect: "Ye who urge filthy devils to spy out the people! The Master's spirits are at hand, and will soon discover you. With this charm any one may travel by sunlight, moonlight, and starlight, all over the earth." But, as may be imagined, the precaution proved inefficacious, and for months the nuisance raged. The general opinion is, of course, that the whole thing was nothing more than a piece of superlative legerdemain on the part of the agents of a secret society, which was believed to be the Lotus-flower sect. It is said that the abscission of a queue was dexterously effected by means of a peculiar little instrument, not unlike a pair of scissors, intensely sharp, and small enough to be held in the palm of the hand, where, indeed, it was entirely concealed from view by certain curious contrivances. There were always two, and sometimes three, persons concerned in the operation — one to monopolise the attention of the victim, another, generally, to sell him a charm, and a third to snip the tail off, or cut it so that it subsequently dropped. This done, the principal operator disappeared, leaving his dupe to buy the talisman—too late! This was not always the exact routine, but the differences in method were unimportant. Of course, it is obvious that, the queue being essentially a Manchu appendage, and therefore a sign that the Chinese are a conquered race, its abscission was intended as an intimation that the power of the Manchu dynasty was doomed.

It would be a mistake to include the Mohammedans of China under the category of secret societies, as their religion is recognised by the State, and followers of the Prophet are certainly to be found among the ablest and most loyal servants of the Emperor. And yet it would be almost equally a mistake to omit all mention of them, not only because it was said, some years ago, that a large number of them professedly regarded the Ameer of Kashgar as their natural lord, but also because they glory in their non-Chinese origin. You cannot pay a Chinese Mohammedan a more acceptable compliment than to hail him as a fellow-foreigner. And what is more, he looks like one, for, although he wears the Chinese dress, and plaits his hair in a queue, his physiognomy is distinctly Turkish. On more than one occasion I have gone up to a stranger in the street, and, struck by his cast of features, said, "Surely, sir, you are Mohammedan?" "Mohammedan!" was always the prompt and proud reply, accompanied by the raising of the right thumb—a gesture I have heard explained as referring to his belief in one God. They are much cleaner than the other Chinese, and generally honest; and it is always well to deal with a Mohammedan butcher, if there happens to be one in your neighbourhood. The number of Chinese Moslems in the eighteen provinces is estimated by some officials at twenty to twenty-five millions; but we have no details. The ceremonies imposed on converts to this persuasion are very simple. The first requisition is the payment of a good round sum of money. This ordinance having been complied with, the candidate is presented for a further mark of favour, and thereupon receives a sound thrashing. But the lustration is not yet complete—the most painful ordeal is yet to be undergone. The unhappy convert is then condemned to drink a large quantity of soap and water, in order to cause the evacuation of any pork he may have eaten—a measure which never fails to produce very speedy and complete results. I ought in fairness to add that I received these details from a Confucianist. The Moslems enjoy complete religious freedom, regard their idolatrous countrymen with contempt, and have a large number of handsome mosques in every part of the Empire.

Numerous and powerful, however, as the Moslems undoubtedly are, it is not likely that if a Mohammedan conqueror were to reach Peking he would meet much of a welcome, even from avowed enemies of the Manchu dynasty, for there are other confederacies, quite as powerful, whose cry is for a Chinese Emperor. To them the invader from the West would be as odious as the Tartar, and in the event of such a change as we are supposing, there would inevitably be some violent collisions. Perhaps the most aggressively anti-foreign confederation in the empire is the Ko Lao Hui, or Society of the Elder Brother. This is an organisation which somewhat resembles the Cave of Adullam, in that it consists to a great extent of malcontents, rowdies, persons hopelessly in debt, and desperadoes generally; but it is said that it has numbered at least one Viceroy and two Provincial Governors in its ranks, and that its propaganda is actively carried on. It was started originally in the army of Tsêng Kuo-fan, the late Marquis Tsêng's father, at Nanking, and it flourishes most strongly in Hunan, Honan, and Anhui, where all the braves belong to it. Its primary and avowed object was mutual assistance and protection; but it is really a seditious association of the men of Central China, binding them together against all foreign usurpers whatever, which includes the reigning family. Their watchword is, "China for the Chinese," or, as they themselves express it, "The Glories of the T'ang dynasty;" and all strangers, of whatever nationality or sect, be they Tartars, Southerners, or Western Chinamen, alike are the objects of their hate. They represent the old exclusive pure-blood race of the Hans, and look upon the inhabitants of the more distant provinces, such as Canton, with jealousy, almost as fierce as that with which they regard the Manchu dynasty itself. The bulk of the confederacy consists of soldiers. Indeed it is more strictly military than any other society of a like nature. Besides these, there are a large number of disbanded braves, together with their families, and it is probable that if one of their old generals were to raise the standard of rebellion he might have a hundred thousand men around him by the time it took to spread the news from Anching to Hankow. The agents of the society generally travel as itinerant doctors, professing to sell nostrums; really engaged, however, in conveying news from chief to chief, and keeping up the fire which, without fomentation, would, I fancy, be very likely to die out. There is an elaborate code of signals, as in the case of the Triad Society, but I have been only able to discover a very few. For instance, two buttons of the coat undone and the queue worn carelessly, in a double loop, over the shoulder in front, are two of the signs whereby the confederates are enabled to recognise each other. The fist clenched and the thumb elevated—precisely the sign made to me by the Mohammedans, by the way—constitutes a third; but I expect that the ritual differs in different places. The Ko Lao Hui has given some considerable trouble in times past, and about twenty years ago raised a serious disturbance in Hunan. In July of the succeeding year one of the conspirators was captured—an event which resulted from the misdelivery of a secret letter, in which a confederate detailed the plot of blowing up the powder-magazine at Hu-k'ou, and afterwards looting the town. The man was summarily beheaded, and subsequent events showed how very apprehensive the authorities had become of further plots, arising from revenge.

So much, then, for the more active and prominent of the societies—those which, whether now or in times past, have evoked the sternest acts of precaution and retribution from the Government. But there are others—curious and fantastic little denominations—which are of importance chiefly to themselves, and of these I will now give a brief sketch.

The Ts'ing Ch'a Mên, or Pure Tea Society—about which we have some rather curious particulars in a memorial addressed to the throne in 1816—is not, as might be supposed from its name, a commercial syndicate in connection with Messrs. Horniman and Company, or even a charitable institution for providing the deserving poor with cups of harmless comfort. It is, on the contrary, a religious body, bearing much the same relation to orthodox Buddhism as the followers of Joanna Southcote bear to orthodox Christianity. A severe raid was made upon the members during the reign of Kia King, with very terrible results to the unfortunate persons who were captured. The Head Centre—a man named Wang Yung-tai—stated in his confession that the doctrines of the sect had been transmitted to him from his ancestors. On the first and fifteenth of each moon the members burn incense, make offerings of fine tea, and, prostrate, worship heaven, earth, the sun, the moon, fire, water, and their deceased parents. They also adore the Three Buddhas and the founder of their religion. In receiving proselytes they touch, with bamboo chopsticks, the eyes, ears, mouth, and nose of the neophytes, commanding them to accept the Three Refuges and the Five Precepts. The Three Refuges, I may here explain—San-kuel in Chinese, Trisharana in Sanscrit—are Buddha, the Law, and the Church, in each of which the lay-devotee solemnly affirms, in a threefold formula, that he takes refuge in making his profession of faith. The Five Precepts—Wu Kieh in Chinese, the Sanscrit Pancha Vêramanî—are, Take no life, Steal not, Be not lustful, Be not light in conversation, Drink no wine. The sect holds, further, that the original progenitor of the Wang family resides in heaven, and that the world is governed by the Three Buddhas in rotation. The reign of the first of these is over; the present age is controlled by Gautama or Sakyamuni; while Mi-li Fu, Maitreya, or the Laughing Buddha, is yet to come. There seems nothing very heterodox about all this; but when it is further asserted that the coming Buddha will be born in the family of Wang, the Head Centre of the sect, and carry all the members thereof after death to the western regions—to the Palace of the Immortal Genii—it makes the judicious grieve. The teacher of such doctrines must be a pestilent heretic, and the unfortunate Wang was very naturally executed and his body cut into small pieces.

At Tientsin there flourishes a fraternity called the Tsai Li Hui, a title that may be freely rendered, The Fellowship of Reason. Its tenets appear to be obscure; but, as far as I have been able to discover, the practices observed consist principally in rigorous abstention from alcohol, tobacco, and opium; in the worship of the Pŏ Yün Ta Ti, the Great God of the White Cloud; in the habitual wearing of white clothes (the usual symbol of mourning), even to their boots and hats; in the preaching of doctrines from a rostrum; in the severe rapping of their heads against the ground during prayer; and in profound secrecy. To use the quaint expression of a native friend, a man may not reveal this creed to his father, his mother, his wife, his elder or his younger sister. So far, however, the association seems a harmless one enough, in spite of the mystery in which it is enshrouded. But the members are closely watched, and, on the principle of *omne ignotum pro horribili,* the authorities have come to the conclusion that they are a very pestilent set of men. A change from their peculiar garb of white to the ordinary colours of the middle class was consequently ordered, a number of years ago, by the Tsû-ssu, or Chief Patriarch; but this was not sufficient to shield them from the jealousy of the Government. As far as one is able to form any idea of the society in question, it would appear to be a teetotallers' association, combined with a certain amount of that hocus-pocus and affected mysticism so dear to human nature—answering, in fact, in some respects to the Good Templars that one hears about in England. The idea of the British Government gravely instituting an inquiry into the tenets professed by the scores of innocent and well-meaning sects enumerated in "Whitaker's Almanac" is ludicrous enough. The great difficulty would be where to stop. And yet, allowing for the narrow education of the Chinese, this excessive vigilance and suspiciousness is scarcely to be wondered at, and the authorities are possibly not far from the truth in hesitating to look upon the movement as purely and exclusively religious.

Many of the other confederacies appear to be simply eccentric. For instance, there is one society which professes what it is pleased to call the Rice Dumpling religion—Tzŭ T'wan Kiao—a peculiar name which calls for explanation. The ceremonies include the eating of small dumplings made of a particularly-glutinous and adhesive kind of rice—a symbolical act, during which the initiated take oaths of secrecy and adhesiveness to one another and the doctrines they profess. But what that doctrine may be I cannot say. The Tan Pei Kiao, or religion of the Spread Cloth, also has many adherents; and these individuals appear to be very much detested by the Government. Of course I am quite in the dark as to their creed, but to judge by their behaviour I should simply say that they were a lot of harmless lunatics. The rites are said to consist in the spreading of a large cloth or cotton drugget upon the ground, on which the members kneel and go through their devotions. These finished, at a given signal the four corners of the sheet are raised and tied in a knot—the unfortunate worshippers find themselves all huddled together in a great bag, and they are then supposed to go to sleep. The whole thing only shows what an amount of personal discomfort people will undergo for the sake of gratifying some preposterous whim.

Missionaries in the interior of China have from time to time been much interested and perplexed at receiving visits from Chinese residing at a considerable distance, who assert that they, too, profess doctrines almost identical with those of Christianity. In some cases, I believe, a direct claim is made to supernatural revelation, and there seems no doubt that certain small communities do exist, in remote villages, of persons entertaining a system of religious faith strangely akin to that of the New Testament. It is particularly with regard to this point that there are men so very much better qualified to speak than I am. I am fain, therefore, to content myself with this brief allusion to the subject. In some instances, I believe, it has been impossible to trace the phenomenon to any earlier promulgation of Christianity, the traces of which might still remain, and have given rise to fresh developments; in others, there appears some ground for believing that such is actually the case. About twenty years ago a missionary at Ningpo stated that a respectable-looking stranger had visited his chapel, and listened attentively to the sermon. After service he stayed to converse. He said that he and his ancestors had worshipped only one God. He knew of Jesus, and Mary, and Moses; said he was neither a Roman Catholic nor a Mohammedan, neither had he seen any Christian books, but that the doctrine had been handed down by his ancestors. He did not know where they obtained it, nor for how many generations they had followed it. He came from one of the western provinces of China, and said that in his native place there were some thirty families of the same religion. The late Mr. Wylie considered that this might possibly point to the existence of some vestige of the early Nestorian church. It is at any rate curious that one, at least, of the emperors of the T'ang dynasty, in the ninth century, was familiar with the story of the deluge, the exploits of Moses, the exodus from Egypt, the names of the Hebrew prophets, and the biography of Christ—a fact sufficiently explained, however, when we remember that a translation of the Scriptures had been made under the direction of the great Emperor T'ai Tsûng as early as two centuries before.*

I will now refer, in conclusion, to certain other societies or corporations, which, though by no means secret, are far too powerful and important to be ignored. These are neither political nor religious; they are distinctively co-operative and commercial. I refer to the institution of Guilds. Now, guilds may be roughly divided into two categories, the apodemic—or, if I may coin a word for the occasion, the compatriotic—and the mercantile. The two overlap each other occasionally; but the distinction I have laid down is in most instances clearly enough defined. Guilds of the first description are, as I understand them, simply co-operative or friendly clubs, consisting of natives from some particular city or province, residing at a distance from their birthplace. Thus, at Shanghai, for example, we have the Canton Guild and the Ningpo Guild, the members of which are Cantonese and Ningpomen respectively. The hall or headquarters of a wealthy guild is generally a very handsome building, decorated with elaborate carving, and very richly gilt. There is also a stage on which plays are acted on high days and holidays, when sumptuous banquets are spread, and the precincts are illuminated with festoons of coloured paper lanterns. It is with the mercantile or trade guilds, however, that Europeans have most to do, and it is with respect to these that I wish to say a few words to you before closing. Nothing exhibits the Chinese love and aptitude for *combining* more remarkably than these institutions. Every trade—every industry—has its duly-organised guild, which fixes the market-rates of produce, frames rules and bye-laws, protects its members from fraud and tyranny, and decides on all matters in dispute. There is the Tea Guild, the Silk Guild, and the Piece-goods Guild; there is even the Coolies' Guild and the Beggars' Guild. And there is no European merchant in China who is able to ignore their existence, or leave them out of his reckoning for a single day. The man from whom he purchases his tea or silk, or to whom he sells his T cloths and grey shirtings, is a member of the local trading-guild; and if any serious dispute arises between the two parties to a transaction, it is the guild which eventually decides the question. It is only fair to say that in many instances the arbitration of the guild is just—that when a native dealer has flagrantly infringed some recognised law or custom, or acted in glaring defiance of plain commercial morality, he is condemned, and the cause of the foreign merchant espoused. To take a case in point. A Chinese dealer, having purchased a cargo of piece-goods of a foreign firm, failed to take delivery of it within the specified time. The usual notice was then served upon him, to the effect that, unless he cleared the goods before a certain date, they would be sold by auction. Still, he took no steps, and the goods were sold. An hour afterwards he calmly sauntered in and said that he had come to take delivery. "Too late," replied the merchant. "You paid no attention to the notice, and the account is closed." The Chinaman immediately appealed to the guild, and was nonsuited. He had violated one of the recognised customs of the trade, and had only himself to thank for the result.

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* *Chinese Recorder*, November, 1868 (Wylie). Also, "Relation des voyages faits par les Arabes et les Persans dans l'Inde et à la Chine." 1845.

But it is a terribly serious matter for a European firm when the guild takes sides against it. There is no appeal, and nothing but the most delicate and even humiliating negotiations can set things straight again. I do not know a more rigid boycott than that instituted by a Chinese trade-guild against an offending firm. The order goes out—No dealings with such-or-such a hong; and woe betide the Chinaman who dares to disobey. Supposing, for example, a dispute of unusual gravity arises between a European silk-inspector and the Chinese dealer. There is a deadlock. The case is reported to the guild, and the guild, perhaps, considers either that the foreigner has behaved with gross injustice or that the point at issue involves a principle too far-reaching and too important to be lightly waived. From that day the firm in question is shut out of the silk market. No muster-bales are sent in. He may be full of orders, he may be harassed by constant telegrams from his Lyons or London correspondents anxious to hear what he is doing for them; but any Chinese broker who should venture to sell him a single bale or book of silk would be mulcted in a heavy fine, posted at the guild-house with the details of his offence, and, if recalcitrant, expelled from the fraternity. Only a few years ago one of the great English shipping firms in China had a difference of opinion—scarcely a dispute—with their Chinese constituents about the payment of freight. It had been the custom for freights to be paid at the end of every month, but the Chinese took it into their heads that the end of every year would suit them better, and insisted upon the change being made. The firm declined: the Hankow branch of the Swatow guild took up the affair, a boycott was proclaimed, and for months—I think it was nearly a year—no cargo was sent by the Chinese in any one of their steamers. It was not until the firm in question opened a branch of their establishment in Hankow itself, and engaged as their compradore a man of great influence with the members of this very guild, that the sore was healed, and then only gradually, and at the expense of certain compromises. Then the business flowed back into its old channel, and the occasion was celebrated by a handsome dinner—paid for, I need scarcely say, by the foreign firm.

I could give you other instances, but have already detained you long enough. I need only add that, in any such dispute as I have instanced arising between a guild and a foreign merchant, it is quite useless for the foreigner to go to law. The guilds are, in point of fact, stronger than the magistrates; and he would be a courageous judge, indeed, who should place himself in a position of antagonism to one of these wealthy, powerful, and widely-ramified corporations. It is true that we are protected, by a clause in one of our treaties, against actions of this sort on the part of corporate bodies, but I think I am right in saying that the provision is virtually a dead letter. A man may appeal to his consul, of course, and the consul may communicate with the native prefect, but the result is generally questionable, and in any case is attained more by careful and tentative negotiation between the prefect and the guild than by the exercise of direct authority. And there are cases, mind you, in which the foreign merchant only gets what he deserves. I am informed that only a very short time ago the boycott was put in force against four firms upon a charge of frivolous rejections of cargo, unreasonable "cuts," and false weighing; and the only comment made by other Europeans in the same trade was, "Serve them right." But such instances are, I fully believe, exceptional. There is only one safe rule for foreign merchants in China. Avoid all difference of opinion with a guild; but if circumstances are too strong for you, then agree with your adversary quickly. It is clear that your fellow-merchants cannot help you. They have their own orders to execute, their own goods to sell, their own steamers to fill up—your extremity may, in fact, be their opportunity. For this is our weak point in dealing with the Chinese. While they combine against us, we compete against each other; and I am afraid that it would pass the wit of man to devise a remedy. If such a remedy ever should be discovered, it could only lie in fighting the Chinese with their own weapons, and that could never be done without support from this side of the water. Is it possible for the Chambers of Commerce in Manchester, London, and Shanghai, acting together on however strict and equitable an understanding, to exert one tithe of the authority over their members exercised by a single Chinese guild? Could the foreign piece-goods merchants of Shanghai, say, combine in refusing to deal with some wealthy Chinese firm who had acted treacherously or unfairly towards one of their number? and, if so, what would a Manchester dealer or manufacturer be likely to reply to the Shanghai consignee who had refused an offer from such a firm on the ground that it had quarrelled with one of his own rivals? Shall we ever see the Shanghai Chamber fixing the lowest price to be accepted for Dewhurst's Eagles, or the highest to be paid for Blue Elephants, and punishing any merchant who should undersell or overbuy his neighbours by the imposition of a heavy fine? For this is what it comes to. Such conundrums may well provoke a smile—a very audible smile, methinks—from a Chinese. Still, the question has more than an academic interest for those engaged in the China trade, and it would be the height of presumption on my part to suggest any solution of it to those who are so much better fitted, both from position and from experience, to deal with the problem than myself.

⁂ It is noteworthy that, within a few weeks of the delivery of this lecture, two of the secret societies referred to—the Ko Lao Hui and the Pai Lien Kiao—broke out into serious anti-foreign, and it is believed anti-dynastic, demonstrations in the Yang-tzŭ valley.—F. H. B.

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ON THE NORTH-EAST COAST OF BRITISH NEW GUINEA, AND SOME OF THE ADJACENT ISLANDS.

By J. P. THOMSON, F.R.S.G.S., &c., &c., corresponding Member of the Manchester Geographical Society.

[Communicated by Mr. THOMSON and read to the Members in the Library, Wednesday, February 25, 1891. Rev. S. A. STEINTHAL in the Chair.]

THE north-east coast of the British possession in Papua extends from East Cape to Mitre Rock, where the Anglo-German demarcation boundary is defined by the 8th parallel of south latitude. Adjacent to this seaboard are several islands and groups of islets that also belong to the British; some of these lie close to the mainland shores, while others, such for instance as the Nada (Lauchlan Islands), Murua (Woodlark Islands), and Trobriand Groups, are located far away to the northward and north-eastward. It is upon these, and upon the geographic conditions of the adjacent coast of the mainland, we propose to descant.

Previous to the establishment of British power in Papua, nothing useful was known of this part of our possession—less, indeed, than of other equally accessible regions—owing, no doubt, in great measure, to its geographic position, which makes it inconvenient to the trading ports of Northern Queensland, as compared with the southern and south-western coast on either side of Port Moresby. It was supposed to offer no tempting inducements for commercial enterprise; the native inhabitants thereof were regarded as notorious anthropophagi; the coastal waters were known to conceal many dangerous reefs, shoals, and rocks; and the inhospitable aspect of the shores extended no alluring invitation to approach them. The hills and mountain ranges, when viewed from afar, appeared to rise abruptly from the seashore, leaving no extensive areas of lowlands, and presenting no favourable inducements to settlement upon their rugged and precipitous faces, while no harbours or ports of refuge were known to exist, the indentations known as Goodenough, Collingwood, Dyke, Acland, and Holnicote Bays being too open and exposed to the north-east wind and sea to afford safe retreat in rough and unsettled weather. Viewed from a geographic standpoint, we cannot therefore regard otherwise than with very great satisfaction, coupled with our sense of gratitude to the administrator himself, the results of the inspection of this coast and some of the adjacent islands by the government of the possession during the end of July, 1890. By these we are now for the first time made acquainted reliably with the ethnography of the natives inhabiting this part of the Papuan territory. We now also for the first time know that Mount Victory possesses great internal activity, and that for maritime enterprise this north-eastern coast offers greater facilities than elsewhere in the possession, as indicated by the discovery of several secure harbours and anchorages in places where formerly itinerary data showed none, and hypothetic evidence discredited their possible existence. More than these, we have succeeded in initiating ourselves into the good graces of the savage tribes, showing them, very probably also for the first time, the good instead of the bad phases of European character, which may inspire, but not divide. We have restored to some of them weapons and other ethnological objects, which ill-advised hands had robbed them of, and, by other equitable acts and imitable examples, the national character has been vindicated, and their feelings of resentment and hatred have given place to those of love and admiration, in itself no little achievement for either governments or individuals to have accomplished.

On the coast-line the Anglo-German boundary is defined by Mitre Rock, supposed to be located, by a singular coincidence, upon or near to the aforesaid 8th parallel of south latitude, and within a quarter of a mile of the shores of Boundary Cape, so named by the late Major-General Sir Peter Scratchley, from the position it occupies in defining the limit of the spheres of German and British influence in that part of the Papuan territory. This huge conglomerate mass, bearing the name of Mitre Rock, projects 60 feet above the surface of the water; its base, which is also about 60 feet in diameter, has an opening of about 12 feet in height and a yard in breadth, extending right through the entire block in the direction of north and south. The top of this most prominent and distinctive landmark is covered by bushes and small trees. About half the size of this remarkable feature, and located a short distance to its southward, stands a bold, pyramidal mass, upon which the name of Craig's Pillar was bestowed by Sir William Macgregor, as a mark of respect to the second officer of the Merrie England. About half a mile farther south a small harbour was discovered, with water of from three to fourteen fathoms in depth; to this indentation the name of Douglas Harbour was given, after the second engineer of the Government steamer aforesaid. In general character, Boundary Cape is composed of low, forest-clad hills, from 400 to 500 feet above the sea, of metamorphic rock. No native villages were observed in this immediate neighbourhood, and the first indications of occupation were met with to the south of Caution Point, where a powerful tribe inhabits a large coastal village. Both here and in Holnicote Bay the natives were friendly disposed, and both men, women, and children approached the expedition without fear or distrust. With some the hair of the men was worn in matted ringlets, or in the form of great mops. They decorated their heads with the feathers of the cassowary, shells, and fibre, and in their ears rings of cocoanut and turtle shells were worn. They were ignorant of the use of iron, and could not be induced to exchange their weapons for any European article offered. These weapons consisted of spears, adzes of jade and of basalt, and clubs, also of basalt. They did not appear to practise tattooing, but the men ornamented their chins with false whiskers, extending from ear to ear. This custom was regarded as somewhat remarkable, from the well-known fact that in other known parts of British Papua the growth of hair upon the face is discouraged. The largest tribe met with on this coast was that inhabiting the lowlands south of Boundary Cape. The women wore net corsets, inwoven with *coix lachryma jobi*, and the men were clothed with "sihis" of coloured native cloth. The district they inhabit is physically composed of hilly ground and sago swamps, with a fringe of flat land along the seashore, clothed by casuarina, mangroves, and forest trees, while the whole is backed by an extensive area of undulating country, extending towards the outliers of the Great Owen Stanley Range. Upon one of the low hills in the neighbourhood of this large village a site for an Anglican mission station was chosen. Notwithstanding that no apparent intercourse had previously been held by Europeans with these people, they were decidedly pacific, and the terms upon which they parted with the expedition were felicitous, although the language they spoke was not understood. At first they did not know the use of iron, nor were they subsequently anxious to procure it. They were neither demonstrative nor suspicious, although at times when inspecting their European visitors their numbers were not less than 500. The impression they left upon His

Honour the Administrator was decidedly a favourable one, and, if dealt with in a proper manner, they will very probably be of some use to the Government of the country, or to private enterprise in territorial settlement.

The bottom of Dyke Acland Bay is occupied by the group of villages known as Oro. The country upon which these are located is flanked by the Hydrographer's Range, which extends its broken, high, forest and grass covered ridges to the seashore, and whose elevated spurs are inhabited by a native population of probably 3,000, who live in villages scattered over the mountain slopes, in some places in the midst of small groves of the cocoanut palms. The country upon the southern aspect of this bay is of a very poor character, being low, wet, and thinly populated, the characteristic timber being casuarina, mangroves, and forest trees. Upon the ridges overlooking Oro Bay, a site was also chosen for an Anglican mission station, which, with that formerly mentioned, will doubtless in time develop into important centres of organised effort, being surrounded by a populous country, apparently healthy, which is now a virgin field for evangelical labour. In general appearance the Oro natives resemble those met with in Collingwood Bay, their dress and ornaments being almost similar, excepting in the case of some of the *men*, who wore corsets of network, inwoven with Job's tears. In this respect they differed from their more northerly neighbours, whose *women*, as before stated, were clothed with a similar garment. Some bore indications of marks tattooed upon the face, but this distinguishing feature, indifferently executed, was not general. Some doubt existed as to whether Oro is the tribal name by which these people are generally known, the appellation having been first used by the local guide, who shouted, "Oro kaivara enao," when approaching them. The eastern flank of Dyke Acland Bay is occupied by Cape Nelson, a prominent headland, upon which is situated Mounts Trafalgar and Victory, with their spurs shooting out to the seashore where fringing reefs protect them from the angry billows of the ocean, which at times are furious; when tossed to and fro by stormy winds they fall upon the coral-bound shore with mighty, crashing sounds. The coast-line of this cape is interesting and picturesque, being remarkable for its numerous indentations, which are separated from one another by grass-covered, conglomerate ridges, rising abruptly to probably 150 feet, their projecting ends being fringed by mangroves. Some of these inlets are perfect havens of refuge to shipping, especially Maclaren Harbour and Port Hennessy, so named by the administrator. A large population appeared to occupy the country at and in the neighbourhood of Cape Nelson. Some of the natives met with were engaged fishing in canoes on and around the projecting reefs of the cape. At first these were shy, but after overtures of a pacific nature had been made to them, confidence was established, and distrust quickly gave place to cordial friendship. Although anxious to procure beads and red cloth, they were perfectly indifferent to the use of iron, and evinced no desire to obtain knives, even after their use had been practically demonstrated to them. Their elaborate head-dresses consisted chiefly of the feathers of the cassowary and ground shells, curved across the head from ear to ear; their ear and nose ornaments were made of marine shells and tortoise-shell, and their breasts were plated with pigs' tusks. Their villages were some distance inland, and their plantations appeared to be located chiefly on the slopes of the low spurs of Mount Trafalgar. It was when in the neighbourhood of Keppel Point that Sir William Macgregor first discovered the seismic character of Mount Victory. Steam was first observed in the early morning issuing from the summit of its two crests, and from a ridge of lower altitude; as the morning advanced the whole top of the mountain was completely obscured by the dense exhalations, which resembled a thundercloud. The altitude of Mount Victory is probably 3,500 feet above the sea, and that of Mount Trafalgar about 4,000 feet. The latter is forested to its summit; upon the former vegetation is not luxuriant, it being very precipitous, its top occupied by bare, rocky masses, and its rugged faces contorted by what appeared to be enormous landslips. Sharp shocks of earthquakes were reported to have been experienced some weeks previously by fishermen in the neighbourhood of Sydney Islands, while on the mainland similar phenomena were also observed at Port Moresby, but on no visible part of the mountain could lava streams be detected.

Collingwood Bay is a large exposed indentation, bounded on its eastern aspect by Cape Sebiribiri (Cape Vogel), and overlooked by Hornby Range, Mounts Suckling and Dayman. Its south-western waters are obstructed by numerous shoals and coral patches, which constantly menace navigation. Little shelter is afforded by this bay, excepting that of an unimportant indentation, to which the name of Phillips Harbour was given, in honour of the Merrie England's chief engineer. This is situated approximately in latitude 9° 30′ south, and longitude 149° 13′ east; its water ranges from eight to fourteen fathoms in depth. From this place to Keppel Point the coastline of the bay is occupied by the Maisina tribe, who live in villages scattered along the seashore. The country between the ranges and the seashore is flat, and densely covered by forest and vegetation, the casuarina variety being conspicuous. The intervening country between Mounts Victory and Suckling for about twenty to thirty miles in extent is also low and thickly wooded. The village dwelling-houses are of an inferior order; they are built just large enough to accommodate one family; the roofs project on one side from the walls to within about three feet from the surface of the ground, so as to form a verandah; beneath this a platform was constructed for resting upon and for family use generally. These small dwellings were supplemented by a large club house, from end to end of which a platform extended for general use as a sleeping place; this style appeared to be in general use in this part of the possession. The people salute by touching the nose and navel. The general practice of destroying the eyebrows is to cut them off, instead of resorting to the usual method obtaining in other parts of the territory of pulling them out by the roots. They consume the betel-nut, but the limespoons dedicated to its use are very inferior in design and in make. Some wore beards, and others wore their hair in long, matted ringlets; they also wore the usual ornaments met with in this part of the possession. Their canoes, which measured about 40ft. in length, were made of one log of wood, with sharp ends, and about two-and-a-half feet in breadth, with very small outriggers projecting some distance from their sides. Of the use of tobacco and iron they were quite ignorant, and at several villages nothing would induce them to accept knives in exchange for their jade adzes. The practice of tattooing was not met with amongst these people, but they ornamented themselves profusely with head-dresses of shells and feathers, earrings, armlets, strings of the small white cowrie shells, and dogs' teeth, and some of the women were habited with short petticoats of native cloth. Their dead are buried in the villages, the graves being ornamented by planted dracœnas and crotons. They maintain friendly relations with the Europeans, and on several occasions showed unmistakable marks of kindness.

The coast-line between Sydney Islands and the Mukawa district, in the neighbourhood of Kibirisi Point, is uninhabited, this section of the country being composed of undulations formed of coral which occupy an area of probably 20 miles broad between the watershed range and the sea-shore. This tract gradually rises towards its western end, culminating opposite Sydney Islands at an altitude of probably 1,000 feet, where the surface assumes a more rocky character than that of the lower levels of this area. Sydney Islands are each a few acres in extent, being of coral formation, very low, covered with trees, and uninhabited. From Kibirisi Point, which consists of several grassy plateaux, terminating in the sea, and separated by deep, narrow gullies, to Cape Sebiribiri, the coast-line of the small intervening bay is occupied by the villages of Kápikápi, Kitora, Ginada, Ogerena, Inageto, and Ataiyo ; these are backed by low mangrove and undulating grassy country. Two interesting features exist opposite Kápikápi in the shape of huge masses of coral, each of probably 80 feet in height, being flat on the top with perpendicular faces ; these are occupied by probably a dozen houses each. To gain access to these wooden ladders are used, which can be removed when not required. These houses, which were stocked with spears, are apparently used for retreats when necessary. The houses on the shores of the bay were comparatively inferior, being built on piles, and having roofs so low that the interiors could not apparently be kept free from wet. The people were very friendly, being neither over shy nor demonstratively forward.

The subject of our discourse upon the north-east coast of the possession concludes with Goodenough Bay, a hook-shaped indentation between East Cape and Cape Sebiribiri. Its eastern arm comprises Ansell's Peninsula, a district rendered notorious by its horrid associations in connection with the massacre of Captain Ansell and the destruction of the "Star of Peace" in 1888. The country at the head of this bay is interesting for the number of miniature plateaux, elevated probably 800 feet above sea level, of which it is chiefly composed ; these picturesque areas are simply washed-down deposits from mountain ravines. The coast range, which is probably 3,000 feet above the sea, trends towards the direction of north-west, its mountains and peaks being precipitous, rugged, and unclothed by forest mantle.

Cape Sebiribiri is a broad projecting point of undulating, woody country, with no features of remarkable character to which special attention may be given. Judged by the general appearance of its native inhabitants, the climate of this part of the possession is probably healthy. The apparent absence, however, of navigable water-courses is greatly against settlement on land that may probably be available for that purpose back from the coast-line.

The Trobriand, Murua (Woodlark) and Nada (Lauchlan) Islands are situated far away to the north and north-east of East Cape, between the parallels of 8° 25′ and 9° 23′ south latitude and the meridians of 150° 30′ and 153° 40′ east longitude.

Nada is a group of islets of about nine in number occupying the most easterly position, the whole forming an atoll, the lagoon of which is from seven to twelve fathoms deep. It is shaped like a horse shoe with the opening facing the west, and its value as a harbour is very considerable. The group is very low ; the vegetation consisting of trees, cocoanut palms, and other less prominent forms. The soil is poor, which necessitates dependence to some extent by the natives upon the productions of the island of Murua, for which privilege they make payment to the people thereof.

According to Mr. Tetzlaff, a resident trader of Nada, the natives of the group number 169 ; these provide themselves with numerous canoes in which their fishing and trading movements are conducted. The group is well supplied with fresh water, and, being apparently healthy, the several islets are desirable places for settlement.

Murua Island, which lies west of Nada, possesses a good harbour on the southern aspect of its eastern end, the geographic position of which is in 9° 10′ south latitude and 152° 55′ east longitude. Longitudinally the island extends east and west for about 38 miles. This island was visited in July, 1890, by Sir William MacGregor, who examined Guasap Harbour, pronouncing favourably upon its natural advantages as a secure haven. The natives of Murua, who are of the usual Papuan type, are active and intelligent ; they have entered the iron age, consequently stone implements were difficult to procure. Their arms consist of the spear, shield, tomahawk, and knife, the former being made of ebony, and the shield of a light, soft wood, painted white. Their food, which is in great abundance, consists of yams, taro, and sweet potatoes. During the years 1847-1852 the island of Murua was occupied by the Marists, who, in the midst of very great privations, and in the face of the most discouraging obstacles, laboured in the noble cause of Christianity, with self-sacrificing love and zeal to duty which more modern preachers might emulate with credit to themselves and advantage to the race.

To the north-west of Murua lie the Trobriand Islands, the largest of which is situated in latitude 8° 30′ south and longitude about 151° east. The whole group is of coral formation, being densely forested, and the abundance of cultivated food everywhere met with indicated the unmistakable fertility of the soil. The natives were very friendly, and evinced eager desires to trade with the members of Sir William Macgregor's expedition. They are typical Papuans, possessing a useful knowledge of wood-carving. They are remarkable experts in shield dancing, and performing graceful movements in social pastime. In general appearance these people bear a very close resemblance to their neighbours of Murua. They catch great quantities of fish, which are, with other articles of food, cooked in wide-mouthed clay pots. It was found upon inspection that, both in respect to resources and population, the Trobriand Group is of greater extent than previously reported, even of such magnitude that the satisfactory accomplishment of its examination could not occupy less time than several weeks.

Astronomical Geography. By E. P. Jackson, A.M. 74pp. Illustrated.

Topics in Geography. By W. F. Nichols, A.M. 174pp.

The Teacher's Manual of Geography. (1) Hints to teachers. (2) Modern facts and ancient fancies. By J. W. Redway. 174pp.

The Reproduction of Geographical Forms. (1) Sand and clay modelling with respect to geographical forms. (2) Map-drawing and map-projection. By J. W. Redway. 84pp. Tables and diagrams. The above are published by Heath and Co., Boston, U.S.A.

How to Enliven Geographical Instruction and to Lighten It. By Dr. K. Ganzenmüller. 30pp. Reprinted from the American Geographical Society's Bulletin.

These little books, inexpensive, but of considerable interest and value to teachers, abound in hints which will make the teaching of Geography a pleasure to the teacher. Some of them are illustrated with beautiful diagrams, most of which can easily be reproduced by the teacher, on a larger scale, on the black-board. Dr. Ganzenmüller's small pamphlet is interesting, and shows the way to make dry names full of interest to an intelligent class. All the books are useful to those who are able to use them judiciously. They are intended to be suggestive text-books for teachers.

The Student's Geography. Second Edition. Physical and Descriptive, Industrial and Commercial, Political and Social, Etymological and Historical. By George Gill, Member of the London Chamber of Commerce. 1,000 pages. 200 maps and diagrams. 4s. 6d. 1891. George Gill and Sons, London.—The Second Edition of "Gill's Student's Geography" has been almost totally re-written, and is a full and ample text-book for teachers in relation to ordinary geographical teaching, and particularly to that latest development, Commercial Geography. The book has been produced in response to "the recent action taken by the leading members of this great commercial community, in harmony with the several examining bodies;" and this manual is characterised by the way it deals with the various industries of the nations and their economic products as connected with international trade, and, as is most fit in an English Geography, with British Commerce more especially. The book is a perfect mine of facts, and marks a distinct advance in the production of admirable text-books on the subject. There are a large number of tables. Of course, if the book is to be of permanent value, new editions, carefully revised, will be necessary. A full index completes what is for the teacher and the student an admirable volume. Great care has been taken in this edition to present the most modern facts.

THE JOURNEY OF M. BONVALOT AND PRINCE HENRY OF ORLEANS ACROSS THIBET.

By Mr. MARK STIRRUP, F.G.S., one of the Members of the Council of the Society.

[Read to the Members in the Library, Tuesday, April 14th, 1891.]

A SOMEWHAT remarkable journey of adventure and exploration across the Thibetan plateau, by M. Gabriel Bonvalot, a distinguished French traveller, and the Prince Henri d'Orleans, the young son of the Duc de Chartres, was successfully accomplished last year. M. Bonvalot had previously been engaged in conjunction with M. Capus, a naturalist, in exploratory work in Central Asia, in 1880, 1881, 1882; and again in 1887 in a mission of exploration organised under the auspices of the Minister of Public Instruction of France, the expenses being voted by the Government, with the object of exploring the valley of the Upper Oxus and of penetrating into Kafiristan. This latter expedition returned to France in September, 1888, after an absence of one year and seven or eight months, having explored the Pamir, crossed the Hindu Kush and the Himalayas, bringing home a collection of natural history, ethnographical objects, and numerous sketches and drawings.

A few months after M. Bonvalot's return to France, overtures were made to him by the Duke of Chartres* to undertake yet another journey into Central Asia, for exploratory purposes. This being an entirely private expedition, the expenses were borne by the Duke, who arranged that his eldest son, Prince Henry of Orleans, should accompany the party as cartographer and photographer. It says much for the courage and hardihood of the Prince, a young man of some 24 or 25 years, in thus undertaking a journey of exceptional difficulty and privation.

The character of the country marked out to be traversed is of the most inhospitable description, and such as to deter any but the most determined travellers. The itinerary to be followed was entirely by land, commencing at Paris and ending at the French possessions of Tonkin, thus traversing Asia and the plateau of Thibet; crossing the great rivers of China and the Indo-Chinese peninsula. Thibet is remarkable as being the most elevated mass of land on the globe, averaging about 15,000 feet above the sea, some of its mountains ranging to upwards of 18,000 feet. This elevated land presents large desert tracts, basin-like depressions with grassy plains, often enclosing great lakes, which are frequently salt, and surrounded by snow-clad mountains. Not only are the physical features of the country and its extreme climate (owing to its elevation) a barrier to exploration, but under the régime of the Thibetan Government, which is largely influenced by China, penetration into the country is practically forbidden. Especially is this the case in any attempt to reach the capital, the holy city of Lhassa (the centre of the Buddhist religion), which stands on a plain surrounded by mountains, at a height of 11,000 feet above the sea, the roads to which are even kept secret, so as to prevent and bar the approach of profane or curious eyes. To show the arduous character of exploration in countries like Thibet, it may be mentioned that recent well-appointed Russian expeditions to Central Asia, in endeavouring to penetrate Kafiristan, and reach the frontier of China, have suffered severely, and been obliged to return with loss of all their horses and baggage animals, not so much from want of food, but owing to the extreme severity of the climate, due to its enormous altitude and constant storms. It does not appear probable that any trade route can either be practicable or profitable across such inhospitable steppes, where human beings are as scarce as the necessaries for sustaining life.

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* Duc de Chartres, youngest son of the late Duke of Orleans, and grandson of Louis Philippe, born 1840.

An account of the journey of M. Bonvalot and Prince Henry of Orleans has been recently published in a special supplement of *Le Temps* newspaper, and from this I have translated the following incidents of the expedition, which will give a lively idea of the difficulties of such an enterprise, and the obstacles to be overcome. M. Bonvalot's emphatic denunciation of the duplicity of Chinese diplomacy is especially worthy of attention, and may serve as a warning to future travellers in regions over which China's influence extends.

ITINERARY.

Quitted Paris, July 6th, 1889. Traversed Russia; stayed at Moscow to make numerous purchases; pursued our way by Nijni Novgorod, Perm, the Oural, Tioumen, Tobolsk, and Omsk, making further purchases of European goods at Omsk; departed for Semiretchié with all speed of *troikas*, only stopping at Tjarkent to organise the caravan before leaving Russian territory, as China commences two days' journey thence. To organise well a caravan for a journey, which will finish one knows not when, is one of the most difficult things explorers have to do. Nothing must be forgotten—care must be used to carry only the useful—for in these countries carriages are not in use and rivers are not navigable. In Africa the rivers are vehicles, here barriers. It is necessary then only to take that which is immediately serviceable for exploration to avoid lengthening the file of camels, horses, and asses. The recruiting of the men is the worst part of the business on the frontier of Siberia, and we regretted that our base of operations was not in Turkestan, where brave fellows are recruited easily.

At Tjarkent we found only men of little value to enrol, and not by any means cut out for a long travel. Rachmed, our old exploring companion, came to join us at Moscow; he was the recruiter. Not a single earnest or good one offered; none but the idle, the indebted, people who wished to pass the frontier under our protection—none of those bold adventurers of Turkestan, with decided, vigorous air, who, having been face to face with death, would follow through fire the master that chance gives him, provided that the master knows how to attach him, sometimes by an equal mixture of good and bad treatment.

At Kouldja we received with pleasure into our band Father Dedeken, a Belgian missionary, speaking Chinese fluently, who was resolved to follow us as far as the Indo-Chinese coast. The Russian consul at Kouldja gave no encouragement to the expedition, smiling with incredulity when the Prince told him we were going to try to arrive at Batang. "Remember," said he, "you have no escort, no tent of felt, no Chinese passport." But experience has demonstrated that we could do without these three things said to be absolutely indispensable. Moreover, as regards the passport, the principal cause of our success was the not having acquainted the Tsung-li-Yamen of Pekin. If we had asked for a passport to travel in these seldom-visited parts of China, we should at the same time have aroused the attention of these excellent Chinese diplomatists, and their Government would have given us the warmest letters of recommendation; but, once our itinerary known, secret orders would have been sent in advance, so that all means should be employed to bar the route and to oblige us to retrace our steps. Such has been the fate of all travellers in China, from the late Prjevalsky to Richthofen, of Count Bela Szechny, and many others. It would be necessary, rest assured, to persuade oneself once for all that the perfidy of Chinese mandarins, be they diplomatists or governors, has no equal but the simplicity of Europeans, sufficiently European to believe in the good faith and in the honesty of the ceremonious sons of the Celestial Empire. Upon this point we advance nothing lightly or thoughtlessly.

Depart from Kouldja, with the authorisation of the Chinese Governor of the Province, and with two guards, who conducted us to the frontiers of the Province of Ili. At the same time there departed, by a more rapid route, the order to stop us, once that frontier passed.

Arrived there in traversing the valleys of Kach, of Koungez, and of Youldouz, *i.e.*, all the chain of the Tien-Chay, Monts Celestes. We had picturesque encampments there, good fires of pines in the evening, good hunting, and a pleasant time under the tents of the Kirghiz. There we also came into contact with the Buddhist world among the Kalmouks, the last survivors of the great exodus which took place in the last century. Being nomads, they have monks who are equally so. Saw a Lamasery installed under the tents of felt. In winter the Lamas return to their villages.

OBOS-STONES ENGRAVED WITH PRAYERS.

In this region one frequently meets some obos along the roads and at the summits of the passes. The obos are not only heaps of stones, but also stones on which a prayer has been engraved. Travelling Lamas, or simple workmen, go about the Buddhist world and offer their services to the faithful. They are lodged, sometimes they are paid, and according to the generosity of one's behaviour they engrave mysterious formulæ upon a more or less number of stones, which are deposited upon the heights, especially at points where, in the passes, the beasts are allowed to breath after a laborious ascent. Passers-by add to the engraved stones other stones, and it is always in praying that they add to them. Sometimes they plant poles in the heap, and attach streamers, squares of stuff, on which are printed long prayers, which the wind agitates, and in this way the wind participates in the redemption, or better, it facilitates the transmigration of souls that are separating from bodies not very fit to live in. We see, for the first time, traced in gigantic letters on the flanks of the Monts Celestes (Celestial Mountains), the sacred words *Om mané Padmé houm.* Millions of men murmur them during their short life, in the hope of a better eternity Our tent was neither large nor comfortable, its height being that of an ordinary man, but it was just so long and wide that all three of us could stretch ourselves under the felts and make our notes by the light of the lantern—eating, with legs crossed, out of a single bowl of wood, wherein was heaped, on fortunate days, a charming *palao,* and in which, later on, were congealed, in grease not very odoriferous, morsels of leathery meat, that one fished out with the fingers. All just like what the heroes of Homer did. Slept well in the tents, rolled up in a warm pelisse made of the long-haired skins of the Turkestan sheep. Learned to bear the transitions of temperature. In the low valley of Koungez the heat had ranged from plus 40° C. in the shade, and in the high valley of Youldouz the cold registered minus 20° during the night. Here we lost by desertion three of the servants.

Arrived at Korla on 5th October. Here we bought rice, bread, corn, salt, &c., for traversing the high plateaus. Here also arrived the order to stop us and forbid us going further.

Departed on 10th. Menaced by an attack outside the town, but we nevertheless proceeded.

At some days' distance from Korla had to cross the Koutché Darya, but neither bridge nor ford exist on the route of Lob Nor. We had to employ the natives to construct rafts, over which we had difficulty to pass the camels, which were frightened at this means of transport. The horses swam across and rolled in the sand on the opposite shore. Twice we had to cross the river upon rafts, then pursued the route along the Tarim. The rare inhabitants who occupy its banks are fishermen and hunters ; their misery is great ; the richest among them would be deemed poor with us. The soil being saline, hardly provides them the wherewithal to furnish á little bread. At Tcharkhalyk, west of Lob Nor, we sent back, with three of our Russian Siberian followers, our ethnographic and natural history collections, and engaged others, who turned out very useful, and to whom the success of the expedition is partly owing. In the account of the travels of the Englishman Carey, there is the question of a route going to Lhassa by the Kizil Sou, a river which would be found beyond the chain that Prjevalsky saw, and called Columbo. Carey had heard speak of this route by natives, but they had not shown it to him. It was necessary to find it at all costs.

During our sojourn at Tcharkhalyk the natives were questioned, but without obtaining precise information. We decided to take up the itinerary followed by Carey when he passed near to the " Lake which freezes not," in order to reach Bokalik, the land of gold. All sorts of difficulties were raised by the followers—the camels could not go. It was enough to discourage less decided and less experienced travellers. "You cannot cross that pass, that river, this desert." Rachmed concluded with Bonvalot, we will go and see.

IN THE DESERT.

November 17.—Caravan quitted Tcharkhalyk in the afternoon, and encamped a few kilometres from village in the sands, not far from water. The desert waited on the threshold of the oasis. The temperature began to be disagreeable, and all were clothed in pelisses. Thus on November 17th we had to support 50° of difference of temperature—16° of frost in the night after 34° of heat in the sun. The air was calm, and we did not complain. The wind is the great enemy of the traveller.

November 18.—A light breeze from south dissipated a little the mist which hid from us the Altyn Tag, and we perceived high mountains. Abdoullah said that on the other side commenced the country of the icy winds. This is quite characteristic of the plateaus of Thibet.

November 23.—Quitted the narrow valley in which we were and cleared the Passe des Sables, and ascended some hundreds of metres. Following on the fatigue of the ascent, several commenced to complain of headaches, buzzing in the ears, and a wish to vomit. Our gold-seekers explained this as being due to the heaviness of the air—*mal de montagne.* In night of 27th November this feeling was much worse. Our troop was harassed—many bled from the nose, for we had ascended to nearly 5,000 metres ; the inclination being very steep, one was obliged in places to hoist the camels and carry the baggage on men's backs from the bottom ; and after the men, new to these parts, saw, as recompense for all their pains, that they were in the middle of a narrow stony valley, arid, naked, without water and without the least brushwood, they became discouraged. If, further on, the road is not better, what will become of us, they said ? They reproached one another for being dragged into such an adventure. Nothing was heard in the bivouac but complaints. Frozen rivers—plains shining with salt—true desert.

December 4, 1889.—Encamped near a little saline lake; met some hunters of Lob Nor, from whom we tried to get some information of our route southwards (across the Thibetan plateau), but without success. The route to Lhassa is kept secret, and this we tried to find. Fortunately a caravan of Kalmouk pilgrims, coming from south, is espied in the distance. Two horsemen are detached to examine it, and finding the feet of the camels in good condition, notwithstanding their long journey, we endeavour to follow the tracks left by them, although often there are few, owing to the hard ice-bound soil. We found, however, preceding years' tracks, as well as fresh, which we followed joyfully southwards. We informed the members of the caravan of our intention to proceed direct upon Lhassa. The prince was charmed, but some of the others were depressed. "We are without papers. What shall we do? How shall we escape out of the hands of the Thibetans, whom the Chinese direct?" Some of our band refused to go further. They left the party near the lagoons of the lake which Prjevalsky and Carey named the "Lake which freezes not." We are now in the desert, which is without brushwood and without water; the wind blowing with violence, and 20° C. of cold—before us the unknown.

December 11.—Departing southwards the spectacle was not exhilarating; traversing belts of ice, which bar the route, upon the border of which were carcases of camels, mangled by wild beasts, and one saw springing out of the ice the backs of camels which had been drowned with their conductors.

We had followed up to December 31, not without trouble, the track, sometimes losing it. We encamped where previous caravans had encamped, making use of the dung of yaks and camels, the only fuel obtainable on the plateaus of Thibet, for warming purposes. We then pursued our way, keeping a sharp eye on the direction of the footprints before us. Occasionally a troop of antelopes was seen feeding on the ligneous herbage of the lower grounds; here and there a wolf or fox. One day a flock of crows was heard croaking above us, waiting for the body of some abandoned beast of burden. We had a flock of sheep with us as part of our provisions. As we advanced southwards we insensibly mounted higher. At first our camps were at 4,000 metres, then at 4,500 and 5,000 metres. All suffered with *mal de montagne*, pains in head and stomach, bleeding at nose, coughing. The beasts rapidly lost their strength, and both the horses and camels dragged themselves miserably along. Glacial nights, with occasional storms, enough to kill man and beast.

December 22.—First horse died. One of the men fell down helpless. Horses had had no water to drink for seven days. They were not yet resigned to bite the ice or lick the snow to satisfy their thirst. Some of the men were seeking a spring. Men lost for a time. Difficult on these plateaus to recover your path. No trees, houses, animals, &c., to guide your wandering gaze. All idea of perspective is lost. The only means of finding the way back is to return upon your traces or feet marks. Rachmed was lost for thirty hours. In a desert like this every man was valuable. Niaz, the camel driver, died of fatigue and cold (30° to 35° of cold).

January 1, 1890.—Tempest. Blinded by wind and sand. Lost all traces of the route. Directed ourselves by compass. During the whole month of January marched by compass in the most monotonous and most deserted of deserts. Nothing but ascents and descents, rounding the hills, and traversing frozen lakes. Sometimes a chain of hills barred the path, over which a pass was searched for. Found lavas on the steppe, and extinct volcanoes to which we gave names. Cold augments. Mercury frozen. 40° of cold.

January 8.—Arrived on the borders of the great lake, 70 or 80 kilometres long and 20 kilometres wide, which we called Lake Montcalm.

January 13 and 14.—Encamped at 5,500 metres. Still volcanoes and lavas. Our tent at foot of a peak of 8,000 metres. On morrow, crossed a pass of 6,000 metres, with glaciers on the west, and enormous peaks. We were in the middle of the highest massif we had seen, all covered with snow and ice. Called them Monts Dupleix. Marched upon the ice of the river, whose direction was southwards, as the most easy and convenient path. We were not far from glaciers, which perhaps are the origin of the Yang-tse-Kiang. All around were small lakes and ponds, then this wide river, and immense blocks of ice of great thickness. When later on the sun melts these prodigious "preserves" of ice, there must be, in this region, in the neighbourhood of Monts Dupleix, a prodigious breaking up, an inundation, leaving lakes upon the high plateaus, which they traverse in rivers, carrying thick mud, and leaving on the flanks of the hills, in the creeks, deposits made from the debris of the heights. These deposits remain there until the following summer. The winter arrests anew the course of the rivers, then under the heat of the sun the solidified masses again become liquid. They begin to move and to give way, carrying with them deposits which from year to year, from stage to stage, they finish by carrying still lower, unceasingly obstructing the valleys, widening the gorges, spreading out deltas, as if a superior will had said to them, "Go, you waters, in concert with the winds and the cold, and demolish the mountain and level the land."

January 18.—Saw wolves, foxes, and monkeys, at 5,500 metres, and traces of summer camps. Killed hares with red feet. Passed near some hot springs, barely salt. In the naked plain, some blocks, isolated pyramids of ice, astonished us; they were frozen geysers.

January 20.—Large troops of wild yaks traversed the plain out of range of our guns. The men were anxious to see signs of fellow men, were tired of the desert, and of long marches without seeing anything, even the smoke of a fire. We advanced up hill and down dale. Our stages were short, our beasts without strength, the surviving horses only able to carry the saddles and bags.

January 27.—Saw running water; tasted it, and found it not to be salt. The neighouring hills covered with old grass, a feast for our weary beasts. The water was warmed by numerous hot springs, and we saw small fishes—rare occurrence—swimming in the stream. All was hope and joy in the camp, thinking the journey almost ended, but this stream ended in a frozen lake at a few kilometres distance. The traces of encampments and tracks of flocks were more frequent as we advanced.

January 30.—Were convinced we were upon the Lhassa road. On the morrow we heard the cry of a man. One of the party was sent to invite him to come near. He turned out to be a Thibetan—short, thin, bareheaded, with small eyes, beardless, with long hair falling over his face and forming a thick tress upon the back, a thick pelisse of sheepskin covering his otherwise naked body, never washed since he was born. On our appearance he rose and presented his respects in a strange manner. He bowed, raised his thumbs, and put out his enormous tongue, allowing it to hang down half a foot. Conversation was difficult, as he knew neither Chinese nor Mongol, and our stock of Thibetan was very slight. Other Thibetans now arrived, carrying lances, matchlocks, and sabres. They entered into conversation, but gestures rather than words were the medium. We showed ingots of silver, and evinced the desire of purchasing some of their sheep. We endeavoured to obtain information about Lhassa, but it was contradictory, and as we were persuaded we were on the right road we continued on it, disbelieving the false tales of these frightful savages.

DISTRUST OF THIBETANS.

We perceived from time to time the tents of natives in the sheltered valleys. Horsemen mounted upon diminutive ponies fled when they perceived us. It seemed as if a void was being made before us.

February 2.—Small companies of horsemen watched us. They followed us, but at a distance out of reach of our guns. Sometimes two or three of the boldest would approach our camp, of which our dogs warned us.

February 5.—Were accosted by a chief speaking Mongol, accompanied by a numerous escort. He was affable, very amiable, and invited us to go no farther. Frequently lesser chiefs, surrounded with horsemen, came to give us similar counsel in a few Mongol words. We answered by asking for sheep and milk. If they refused the sheep we took them by force, paying for them at double price.

February 13.—Still pursuing our way, we are upon borders of Lake Namtso, "Lac du Ciel," a mirror of ice seventy kilometres long, by ten to twenty in width, which spreads out at a height of 4,700 metres. Many times had we thought to be near this lake; but lakes are numerous in this region, and when, from the height of a pass, we perceived across the mountains a patch of ice, the extremity of a pool or lake, we supposed it to be Lake Namtso, but on approach found it to be too small. This great lake is surrounded by mountains on the east. On this side it has a beach, on which we encamped. To the south it is dominated by the white peaks of Ninjin Tangla. In this region the horsemen who were watching us increased in numbers, though keeping at a distance. We marched again for two days, leaving Namtso behind us. But it was necessary that a stop be put to our march in the mountains, in the pass which leads to Lhassa. The Thibetan authorities invited us to encamp, in order to palaver. The tribes of the plateau seemed to have been summoned. Three or four hundred horsemen, armed with lances, sabres, and matchlocks, were grouped within view of our small band.

February 17.—We decided to open negotiations. On December 17 we entered the desert, and without leaving it we had marched about 1,400 kilometres. All our horses were dead, our camels worn out; in eight days more all would be dead. The camel driver still possessed seven or eight capable of marching a few days. The men were exhausted, without strength, broken down in spirit, astonished, surprised at this journey, which they had accomplished much against their wish, and they were now worth little for a *coup de main.* The negotiations opened with the Thibetans, who commenced with menaces and finished amicably.

On February 17, serious *pourparlers* commenced. They lasted until April 5, date when we continued our travel. These Thibetans of Lhassa are very suspicious temporizers. They took us at first to be Russians, members of the Petzoff Expedition, which they had received notice from Pekin to stop by all possible means. Now, remark that Petzoff was furnished with all the passports, all the Chinese papers that a Chancellor's office can imagine. It is the custom of Pekin: smiles before your face, treachery behind your back. It would seem that straightforwardness does not exist in the country; neither plighted word nor signed papers have any value, from what we have been able to judge. These yellow men only bend before force and accomplished fact. With regard to the Thibetans, they have not left with us any disagreeable souvenir, although they have often furnished the occasion to swear at their slowness in being persuaded. Thus, it took twelve or thirteen days to convince them that we were French and not Russian. It is true they had never in their life seen any of our countrymen. Our nationality established, it remained to prove to them that our intentions were not bad; that we did not nourish any black designs; and that when we asserted something, we had the habit of executing it. Thanks to some arguments *ad hominem*, we perfectly established this last point. It took us one long month to convince them we were friends, not enemies. These principal men of Lhassa were acute diplomatists, of unheard-of patience and incredible tenacity. Had they a suspicion, they sought to clear it up, a hundred times returning to the subject. They excelled in the art of turning a man inside or out—getting at his secret thoughts. In the tent of each chief was set up a little chapel, a lamp burning before it, or small wax candles, on fête days. Each night they prayed for several hours, singing in loud voices, among which were some superb basses.

At last, April 5, we set off towards the "Little Tea Road," which would lead us to Batang, *en route* to Hanoi. We were furnished with means of transport and left good friends. Our guide was a big Lama, of whom we had not in the least to complain. Before directing our course to the east we bid adieu to part of our men, to the half which returned towards the north by the grand route of the caravans. The Thibetans furnished us with food, for we had to traverse deserts where nothing was cultivated and men are rare. Our men of Lob Nor melted into tears on quitting us; some months of common suffering had made them devoted friends. We know not what has become of them.

The new route, unknown, that we followed from north of Lhassa to Batang, is a secret road, of which the Chinese are ignorant—it is easier than the "great road" followed previously by Fathers Huc and Gabet. Have difficulties with the savage tribes that we visit. Encounter the hostility of those which are independent and live by brigandage. However, by diplomacy and by force our troop of six persons has been able to make about 1,500 kilometres in the unknown, before reaching the route of our French missionaries. After 2,600 or 2,700 kilometres of the unknown it remains to tell of the long road in the mountain of Tchangka to Batang, then to Litang, to Tatsien Lou, the extreme frontier of Thibet, and from there towards the south, across Setchuen, and then Yunnan to Tonkin.

From April 5 our luggage was carried on the backs of yaks, or of men, as far as Tatsien Lou. I had unpleasant reminiscences of the yaks at Wakham (north of the Pamir). Those of Thibet were more robust, faster, but quite as savage and intractable. It was difficult to load them, to bring them together; they marched pell-mell, according to their fancy, climbing to right or left, running after a tuft of grass, leaping from almost perpendicular bluffs, although laden, with surprising skill. Our poor trunks were subjected to many a shock, owing to these cursed oxen, which have tails like a horse. But these yaks thrive where any other beast would die of hunger, and the products of their digestion constitute a very precious combustible.

Although more picturesque than the one we had followed previously, the new route appeared very long to many among us. Nothing but mountains; they were wooded as we approached the east, and inhabited by miserable Thibetans. Moreover, we had charming landscapes, especially as we approached Batang, and it was with joy that we again met with the majority of our European trees.

June 24.—We arrived at Tatsien Lou on St. John's Day, and the anniversary of Solferino. We were welcomed there by compatriots, French missionaries. The whole of France was represented in this corner of China. The first father among the vanguard that we saw was from Langres (Father Couroux); the second, Father Geraudet, from Nantes; then Father Dejean, of Bordeaux; lastly, M. Biet, of Langres, having at his side an Albanian mountaineer. Natives of Breton, Franche-Comté, Champagne, Gascony, and Burgundy, all were as good as they could be to us.

Thanks to the kindness of Monsignor Biet and his missionaries, we were able to regain sufficient strength and health to depart July 28, and arrive, crossing Setchuen and Yunnan, at the Red River, which we descended in canoes.

Lastly, all the six of us arrived September 28 at Hanoi. It was almost France, at the very least it may be said to be a morsel of fatherland, in the extreme east. Useless to say with what joy we entered again into civilised life, heard our national tongue, saw again our flag and our soldiers proudly wearing their uniform. Useless to speak also of the warm reception given to the Frenchmen who arrived from the west across the Asiatic continent by a route that no one had ever trod. We stayed at Hanoi about a month, resting from our fatigues, before starting again for France, viâ Saigon, Singapore, Ceylon, Suez to Marseilles. Thus our journey had led us through Siberia, and the immense icy plateaus of Central Asia, to the torrid regions of Indo-China, and in 15 months we had traversed the old continent, explored Thibet, and gathered rich collections for France.

On November 22, 1890, M. Gabriel Bonvalot, the Prince Henry of Orleans, and Father Dedeken disembarked at Marseilles.

The following day they arrived in Paris, and were warmly received at the railway station by a delegation of the Paris Geographical Society, by whom they were felicitated on their happy triumph over the dangers of every kind which had beset them; and in the words of the President of the Society, M. A. de Quatrefages, they were thanked "for the great and glorious page which they had just added to the history of the earth, in tracing an entirely new route of about 2,500 kilometres in the highest region of the globe."

The collections made during the journey have since been given to the State by M. Bonvalot and the Prince, and an exhibition of them has been opened to the public (June, 1891), in the Zoological Gallery of the Museum, Jardin des Plantes, Paris.

They form two groups:(1) natural history; (2) ethnography.

The first contains a numerous and interesting series of mammals and birds.

Among the former may be mentioned examples of the wild horse (*Equus kiang*) from the region of Lob Nor, an antelope (*Pantholops Hodgsoni*), *Ovis poli*, the largest of the Ovidæ, a wild yak, a member of the family of Bovidæ, or oxen, bearing the scientific name of *Pœphagus grunniens*, from its grunting like a pig—this wild species is larger and stronger than the domesticated variety, and is a native of the mountains of Thibet—a bear from Lob Nor, a variety of *Ursus Syriacus*, and a specimen of *Ursus collaris*, several species of *Felis*, as the ounce (*Felis irbis*), or great panther, which is very numerous in Thibet, *Felis chinensis*, *Felis nigripectus* (*manul*), *Felis Shawiana*, a large lynx (*Lynx rufus*), and many representatives of other and smaller mammals.

Flora.—The collection of plants, the work of the Prince, consists of 484 species, among which are 80 new to science. The character of the vegetation is Himalayan, that of high summits, in which dryness and violent winds prevail, which cause the shrubs and herbaceous plants to be stunted and dwarfed.

The second group, ethnography, contains a series of curious objects having connection with the costume and religion of the people. In addition to these there are nearly 800 photographs, all good and successfully taken, representing Thibetan types—groups of men and women, views of the country traversed, and of the primitive-looking habitations of the natives, &c.

Album des Services Maritimes, Postaux Français et Etrangers avec Notices Commerciales sur les Principaux Ports, Français et Etrangers. By MM. Paul Jaccottey and Maxime Mabyre. 8 maps. 34 pages of Notes and Index. Ch. Delagrave, Paris.—This series of maps gives the postal services of France, the lines of navigation, telegraphic communication throughout the world, and the principal ports are marked. The maps are of large size and beautifully printed. For commercial purposes and for the teaching of commercial geography they are of very great value. One of the maps may be seen at the Library of the Society.

CORRESPONDENCE.

[Mrs. Moir's letters, read at the Library, February 25th, 1891.]

Ujiji, Lake Tanganyika, 14th July, 1890.

I want to tell you about our journey and our new experiences. On Tuesday, 8th July, we got all our loads ready, viz., three cases provisions, two baskets food, and cooking utensils, one tin box, one bed, one bag, blankets, one camera box, and a number of loads of calico and stuff for trading. Some of these were sent on by road (about three hours' walk) to Niam Rorlo, and we went in the faithful big canoe. We left Chuanganya* behind in a state of great grief. We reached Niam Rorlo about 1 o'clock, and had lunch and dinner with Mr. Carson, and at 6 o'clock got on board the Morning Star and arranged our things. Sailed at 5-30 p.m., leaving Mrs. Swann on the beach in a forlorn state. Mr. Swann, Fred and myself, Kiongwe, and twenty natives, formed the passengers and crew. We made a quick passage to Karema, one of the stations of the French Roman Catholic mission. We arrived on Friday at 7 in the morning, but to do this we sailed night and day—indeed none of us undressed all the way to Ujiji, and Mr. Swann never slept at night all the way.

I want to tell you about Karema, and the wonderful progress the French Roman Catholic Mission is making. The missionaries themselves are called "Lavigerie's White Fathers." There are five of these men on each station, and a bishop over them who sails about Tanganyika and visits each of the three stations in turn. The missionaries guarantee to protect the people, but not to go out and fight. So their stations are built like forts, and are very strong and loopholed all round. A colonel or captain, Yubert, a soldier in the Papal army, has come out to do the fighting department. He is not a missionary, and lives by himself with his native troops, and his work is to defend the mission stations if they are in danger.†

These White Fathers are dressed in long white (when clean) flannel, white and black rosaries, and great big helmets, and are very nice men. When they are sent here they come *for life;* they leave only when they die! One of the Fathers at Karema has been twelve years on Tanganyika; he looks very weak and ill, but is able for work. Their plan of operations is to *buy* from Arabs, chiefs, parents or relatives several hundred small boys and girls from three to five years old. The children live in houses round the court of the monastery or fort, and gradually grow up. Every child is taught to work, and each hoes its little bit of garden, and they are brought up strictly as Roman Catholics. I forgot to say the Fathers plant their stations in districts where there are no villages, but lots of ground for cultivating. As these children grow, the big boys are sent to live in a village by themselves near the convent and the big girls ditto. Then when a boy wants to marry he gets a girl, and they live together in another village further off and are pure Roman Catholics, knowing no other religion or superstition. As each person cultivates his garden the Mission is practically self-supporting, and the only heavy expense is the buying of children year by year. The priests do not teach many of them to read, but rather encourage them in industrial occupations. One station has now one thousand church goers. Two Protestant missionaries said to us, "Don't be surprised if some time you find the whole shores of Tanganyika Roman Catholic." The weak point is the *buying* of the children, as it encourages slavery ; but otherwise, it seems to me, they show great wisdom, and their natives turn out satisfactory.

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* Her native servant.

† Mrs. Moir adds in a postscript: "Since writing the above we have heard that Captain Yubert is an agent of the Congo Free State. He has done some fighting in defence of the missions and the people under him, and has therefore rather got into hot water with the Arabs, whose influence is pretty well paramount on Lake Tanganyika. From all accounts he does not seem to be very well supported from headquarters, yet this may be from the difficulty of transport through the district of Stanley Falls, where Tippoo Tib is governor and practically ruler.

Well, I have told you a lot about the Karema Mission, but we felt great interest in it. There is no comparison between the progress they have made and that of the L. M. S. Mission on the lake, who so far have little hold of the people, though they work bravely.

Two days more, with favourable winds, brought us to Ujiji, where we landed on Sunday forenoon, and were conducted to the verandah of one of the leading Arabs. Here we squatted on mats, and slaves brought us tea, and Huntley and Palmer's honey wafers, and then coffee. Soon Rumalisa* came, a tall, very thin, middle-aged man, extremely quiet and gentle in his manner, but with a certain dignity about him. He took us to his house, which is much the largest in Ujiji, and presently we were seated in his verandah on a Persian rug, and went through the same programme of tea, coffee, and sweets. As we were tired we said we should like to wash and rest, so ten girl slaves were sent to bring water in large copper pots, with which they filled great clay pots in a most ingenious bathroom. After washing we were taken to the chief room of the house, a magnificent apartment, though not over clean, some 40 by 15 feet. It opened off the women's court, and during all our stay in Ujiji our ears were refreshed by the constant loud shrill chatter of some sixty to eighty girls. We were requested not to allow our boys to attend upon us, but Rumalisa told us, through Kiongwe, we might have four, six, or eight girls to do everything we wanted—girl boys as Kiongwe called them. We had an old slave, Atibo, to cook for us, and a capital cook she was, and two girls sat constantly, either outside or inside our room, to get whatever we wanted. At first they were very attentive, but latterly were impudent and not so willing. What a laughing, talking, quarrelling, idle lot these women were. The most of them plaited grass, with which they made beautiful mats, but many of the wives did little or nothing. There are two Muscat wives, who live in one room, and do not go out, and some twenty slave wives, very handsome women, who each have five or six common slave girls to wait on them. And these make up Rumalisa's Ujiji household. He has many other such, and his chief wife is in Zanzibar. All are well dressed and well fed, and proud of their position ; very different from the wretched creatures in chains and slave sticks, who are sold in the market as beasts of burden to carry ivory, &c., to the coast.

July 15th.

What a day this has been of being interviewed, and trying to speak to the women, and to understand what they are saying to me. As soon as I was dressed, I was carried off to see them cook a sort of bread they make from wheat. They make it into flat cakes and drop them into boiling butter, but the butter is not nice like ours. They also cook quantities of all sorts of sweet things for Rumalisa and his guests, and we see every morning a huge brass tray being carried across the court to his house on a slave boy's head. They always bring us our share of the dainties. After seeing the bread finished we had breakfast as usual of beautiful rice and the invariable sort of curry stew. Then the old cook, Atibo, made some very nice blancmange of fine rice flour and milk, and instead of putting it into a big dish she filled all the saucers and shallow plates she could lay hands on with it. We did not know if she was cooking it for us or for Rumalisa, but after we had about finished breakfast in came one after another eight or ten women, each carrying a plate of this stuff, which they set down beside us. Fred said that was a great deal to bring, but one of the head slave wives answered, "It wouldn't do for you to say that the people of Rumalisa did not give you enough to eat." I have forgotten to say that before breakfast we went out to the market and took three photographs. I can't tell you what a queer place Ujiji is—in fact one must see it to understand what a mixture of civilisation and its opposite are here. Think of a daily market in this outlandish place, where goat meat, salt, a sort of butter, flour, rice, mats, ivory, ground nuts, bananas, dried fish, are sold for regular prices, and where the money consists of beads. It is not as with us at Mandala, a case of barter, but regular buying and selling, the special beads used being valueless except as money. Here we saw the most primitive of natives in his skin apron, and the wealthy Arabs, and their head-slaves, swathed in calico, and the various grades between. Ujiji is composed of Rumalisa's house, the chief Arab, and some half-dozen other Arabs, who live in their *tembes*, or big houses, outside of which live in their huts the married slaves and odd people, such as boys and old people. There are also some tradesmen—native smiths, tailors, sugar makers, &c., and the natives of the place, who are of little or no account. To go on with to-day, however. After breakfast, and on till evening, I had a constant flow of women in, so that both Fred and I are now quite tired—he with buying quantities of ivory and marking all the tusks, ninety I think—and I with talking and being agreeable. The two white wives ventured across the court to call for me this afternoon, and were in a state of fear lest Fred should come in and see them. I showed them photographs of Mandala House, baby, &c., and gave them sweeties and biscuits, but must say they are disagreeable-looking women. The head one made no effort to be pleasant, but lolled in a chair and stared about, and wanted to see things and to get sweets to eat. She wasn't pleased because we hadn't the sort of biscuits she wished, but condescended to let her slave take away a few, which, no doubt, she would try in her own quarters. They are totally ignorant, and have no ideas beyond the gossip and scandal they and the other women talk about all day long. I wasn't sorry when they took their departure.

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* The chief Arab at Ujiji.

. . . .

August.

I will now go on to give you an account of the return voyage and of our dhow experience.

A Tanganyika dhow is a rare-looking piece of patchwork. Its foundation is a large canoe, say 40 feet long, into which they nail strong ribs, and add several planks to the sides to make it higher above the water. There isn't a straight line in its whole construction, and unless you saw one you couldn't believe the way they cobble them up and cut out rotten bits, putting in new pieces of wood. We saw several boats waiting for repair at Ujiji, which were in such a terrible state of dilapidation that they looked fit for nothing but firewood. Still the native carpenters seldom lose hope of even such wrecks, and patch and caulk with palm oil and cotton till they have the old things afloat again. There is a small platform at each end of a dhow, and seats for the rowers in between, a mast, and one huge lateen sail. We have in our boat fourteen rowers and a captain, besides our own eight boys, whom we brought with us, who live in the bottom of the dhow on the top of the cargo and bilge water. We live on the stern platform, and have a sort of erection to keep the sun off. In this place—five by four and a half feet—we have existed for eighteen days and nights, through storms, and calms, and burning sun. When the captain remembers to put it up, we have the Arab flag flying. It is composed of pieces of Turkey red and white calico sewed together, and on the white part is written a bit of the Koran in ink.

Well, then, picture us departing from Ujiji at midday on Saturday, 19th July, in the best of spirits at finally getting off, and quite pleased with our barks. For the first two days and nights we thought we had discovered the very pleasantest way of travelling. How delightful it was to glide along for a few hours before a fair wind, and then when it ceased to anchor in some out-of-the-way bay, where the primitive inhabitants came, first warily and with some fear, to offer dried fish and other things for sale, and then, when they gained confidence, coming in numbers, the queer women, with their babies tied on their backs in a goat's skin, hearing there was a white woman to see, venturing out to the boat to have a good look; then on again in the evening when the land breezes began.

Tanganyika is a curious lake. It is said to have been two lakes in olden times, and this is very likely to be true, for the northern and southern parts are quite different. The northern half is very windy, and there are frequent heavy gales. The hills round it are not high and are very sandy, and as a rule run parallel with the water line. The southern portion is quite different and much prettier. The usual winds are gentle, and for the greater part the shore is composed of the ends of numberless mountain ranges which run into the lake. At some time or other the water level here must have fallen twenty feet, and the effect is to expose a series of wonderful combinations of boulders heaped together and on the top of each other in the most fantastic way. All the rocks which have been under water are now pure white, so it is a very pretty coast line, and there are endless sheltered bays to run into if a wrong wind comes. On the third night after we left Ujiji, about two a.m., as we were peacefully sleeping and floating along, a sudden gale came from the south, and very soon the sea rose to an alarming extent. It was very dark, and all we could make out of land was a line of cliffs. Our crew, as is their custom at critical times, were all talking at the pitch of their voices, all squabbling, each giving different advice and seemingly doing nothing. At last they threw out the big stone which serves as anchor, and let the boat drift. Then she began to roll, and such rolling I never before felt. Every time she righted herself after a big one we felt thankful, but hardly thought she could hold together for many more. How we longed for the morning, and the first reddening of the sky that comes about an hour before sunrise was never more welcome. When it was light enough the men decided to run out before the wind to the middle of the lake and tack back again. But there was no tacking for us that day, and sometimes with bare poles, sometimes with a corner of the sail up, we scudded across a sea of white-crested waves, and did not know what it meant to be free of painful anxiety till we got to the west coast, and into the still waters of a small lagoon, about two in the afternoon. The wind died completely in the evening, and reluctantly we set sail again about midnight. We sailed gently all night, and reached another lagoon in the early morning, where we stayed all the day and watched the great south waves tearing past us again. We went on this way for four days. Then the winds lightened, and we crossed the lake again, arriving just a few miles south of the place where the storm drove us from on Saturday morning. Again we had to stay in shelter all day, and went on at sunset with the land breezes. We have both written, in separate letters, of the dreadful Sunday which followed—how, struggling on, we were caught in the morning by a sudden gale, and driven ashore on the Attongwe country. I am not going to repeat all the details of that day. On Monday we anchored in a small desolate cove in the rocks, and kept a sharp look-out for people, but we saw none. Another weary night brought us next forenoon to four miles from Karema the longed-for. By this time every stranger we saw was looked at most suspiciously, and when we noticed two great strapping fellows coming tearing along armed with guns I just wondered what it meant, and never before felt the benefit of a Mission Station so much as when we saw crucifixes hung round their necks. They brought us a very kind note from the White Fathers offering us hospitality. Fred had fever then, but in a few hours, when he was rather better, we dragged ourselves along the four miles of loose sand, and reached the convent about five o'clock in the evening, two weak and very wearied travellers. We received the very greatest kindness, and had such a good rest. Next morning we felt much refreshed, and walked about the Mission Station and took photographs. The mast and helm of our dhow, both of which were injured during the storm, were mended, and we started at sunset on Wednesday (30th August) very much refreshed and encouraged. The White Fathers gave us lemons, and bananas, and beans, and eggs, and tomatoes when we left, and we gave them some tinned foods.

Near Karema, Lake Tanganyika,
In a lonely harbour among rocky cliffs,
Monday, 28th July, 1890.

[This letter recounts the adventures of Sunday, 27th July.]

We had such an alarming day yesterday that I would like to write and tell you about it, and how wonderfully our lives were spared. For the last week we have hardly been free of anxiety for an hour, and have had several narrow escapes. Travelling in a dhow is far from safe, and as you will see in my other letter we had to cross the whole lake to escape one storm. Yesterday morning we found ourselves in an immense bay, called here Deep Bay, in the centre of which is the R.C. Mission Station of Karema, for which port we were making. Before we could reach any shelter a strong gale came up from the south, and the dhow made so much leeway that very soon we found ourselves being carried wholesale on to the shore. We fully expected the dhow to break up, but the boys, with very primitive means, managed to keep her afloat though bumping heavily. Fortunately the beach was mostly sand, with some stones. We all went on shore, taking a lot of things with us, but leaving the ivory and boxes. Our other dhow, with more ivory, went ashore in the same way about a mile north of us, and twice the boys told us she was broken, but this wasn't true, and they managed to keep her afloat too. The land where we went ashore belongs to the Attongwe tribe, a people well known to be treacherous and usually at war with all their neighbours. We were most anxious not to have to land in their country, but we were forced to do so. Soon they came in numbers to see us and to beg, but we were thankful to find them friendly and inclined to bring fowls and food for us to buy. They had a great beer drinking on, and kept us uncomfortable all day, being rather rude and forward in their ways and very greedy, but knowing how dangerous they were we did our best to keep them in good humour. The women and children came in great numbers, a sign that war was not intended. At last, by dint of presents to the chief and head men, we got the rowdy party to leave, apparently in good humour, about five o'clock, when we had some dinner with all speed, and longed—how much I can't tell you—for the terrible breakers to calm, so that we might escape, for the boys told us the people would be sure to come back when it was dark and try to kill us—a fact which Fred more than suspected all day. The wind on this lake always changes at sundown, so we told the boys to get everything on board to be able to start at once, and to have the guns in readiness. At 5·20, just as we were busy at this, we heard a gunshot near us, and I saw Fred look anxious. He at once told everyone to go the boat. I wish you could have seen what followed at a safe distance. Everyone went helter-skelter into the water, carrying as much as possible. One cut loose the anchor, and numbers seized the dhow and pushed her through the surf out to sea, the waves breaking over her. Two boys carried me out on their shoulders, and the waves went over their heads and over me too. By this time the natives were running along the beach and firing at us. I got on board somehow, and the boys told me to keep down in the bottom of the boat, as they all were. *But Fred wasn't there.* He was the last to leave the shore, and I can never forget the agony of seeing him walking out to the dhow up to the neck in water, the waves breaking over him, and bullets whizzing close by him. At last he reached us, and managed to hold on with his one good arm.* I entreated the boys to help him, and did the best I could to get him in, but they were all engrossed with their own concerns, managing the boat, and saving their skins. This was perhaps the most awful moment, for the scoundrels on shore aimed at Fred to kill him, and the one splendid fellow, Lojanga, who came to my help, was shot down, just at my side, before he could reach Fred. At the same time also, although we did not know till afterwards, a bullet went clear through my double terai hat in two places, so near that half an inch meant life or death. This was just when we were getting Fred in, which really only took perhaps two minutes, though it seemed much longer. We now began to fire rapidly from the boat, and the pluckiest boys rowed slowly through the great waves, and after perhaps ten minutes we saw the people on shore running away, and soon we were out of their bullet range. The boys say we killed six, but probably not so many. Fred saw one body on the sand. They did not gain much by their cowardly attack, for we managed to carry off everything except one iron plate and a little native porridge. They had heard of the ivory, and one man had seen some of it, and they evidently thought they would take us by surprise and kill us before we could escape, and get all the booty. It is not the custom of natives to attack before the sun goes down, so this attack was all the more mean and treacherous. Lojanga was the only man wounded in either of the boats, and I think he will recover.† The bullet went in on his left side, and came out between the shoulder blades. No bones seem broken, and he is so patient and gentle, and never complains at all, though in a good deal of pain. He is lying in the bottom of the boat, and we have given him a blanket to keep him warm, and have bound up his wounds.

⁂ Since these letters were read a collection of the letters of Mrs. Moir have been reprinted in a little volume (price 1s. 6d.), and published by J. Maclehose and Sons, Glasgow. The volume is illustrated with views, portraits, and sketches, and sketch-maps, from Mrs. Moir's drawings and photographs. The letters were written to Mrs. Moir's friends, and she will be surprised to find they have been printed, but "A Lady's Letters from Central Africa" are very interesting; and as the members of the Society have had the pleasure to make the personal acquaintance of these two pioneer trading brothers, Mr. J. W. Moir and Mr. F. L. M. Moir, they will read these very interesting and unconventional letters with as keen an interest, and with as much pleasure, as Mrs. Moir's friends in Glasgow.

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* Mr. Fredk. L. M. Moir had the joint of his right arm shattered with a bullet when leading an attack upon Arab slave raiders near Karongas Station on 10th April, 1888. His brother, Mr. John Moir, was shot through the leg, a few months before, in similar circumstances.

† Later accounts report Lojanga's recovery.

PROCEEDINGS OF THE SOCIETY

FROM JANUARY 1ST TO MARCH 31ST, 1891.

The 147th Meeting of the Society, held in the Library, Friday, Jan. 16th, 1891, at 7 p.m. The SECRETARY in the chair. Coffee was served at 7. Minutes of meetings, Dec. 19th (145) and 27th (146), were read and approved.

The CHAIRMAN led a very interesting review of the Geographical explorations of the year 1890, in the discussion of which most of the members present took part.

The 148th Meeting of the Society, held in the Memorial Hall, Monday, Jan. 19th, 1891, at 7-30 p.m. The Rev. S. A. STEINTHAL in the chair.

The Victorians—Messrs. REED, GRINDLEY, H. and E. SOWERBUTTS—gave a capital resume of the Stanley march across Africa, and a short monograph on the Pygmies was read.

The address was illustrated with maps and lantern views, and was listened to with very great attention. The usual votes of thanks concluded the meeting.

The 149th Meeting of the Society, held in the Memorial Hall, Wednesday, Feb. 4th, 1891, at 7-30 p.m. The Rev. P. RAMAGE, of Radcliffe, in the chair.

Rev. THOMAS SLEVAN, of Poulton-le-Fylde, gave an interesting and valuable address on "The Honey Bee; its Natural History, Geographical Distribution, and Commercial and Industrial Value," illustrated with diagrams, beehives, &c. (See page 9.)

A large number of questions were asked, and a lively discussion ensued, Mr. Carr, of Newton Heath (a bee master), Mr. O'Connor, and others speaking at length. Very hearty votes of thanks were given to Mr. Slevan and the Chairman and were responded to, and the meeting closed.

The 150th Meeting of the Society, held in the Library, Wednesday, Feb. 25th, 1891, at 7-30 p.m. The Rev. S. A. STEINTHAL in the chair.

The minutes of meetings, Jan. 16th (147), 19th (148), and Feb. 4th (149), having been read, presentations to the library and the election of the following members were announced:—

HONORARY: Dr. Carl Peters.

CORRESPONDING: Professor Ferd. Borsari (Naples); Messrs. J. P. Thomson (Brisbane) and J. S. Thornton.

LIFE: Mr. E. W. Mellor.

ORDINARY: Messrs. Joseph Bolton, Joseph Booker (in lieu of Associate), Thomas Bostock, Councillor J. H. Butterworth, J. C. Chorlton, Harry Eastwood, J. Harrison, Walter J. Hunt, Mrs. Bosdin T. Leech (in lieu of Associate), J. R. Plews, Rev. P. Ramage, Professor Watson Smith, John Thompson, J. Trueman, and Charles Wilde.

ASSOCIATE: William Booth Leech, Rev. G. Cranston, C. J. Davies, and Miss Annie Perkins.

The SECRETARY reported the meeting at the Schiller-Anstalt, on February 11th, to receive Dr. Carl Peters, and explained that, owing to the short time available, it was found impossible to communicate with the bulk of the members.

The SECRETARY gave an address on "Geography in the Newspapers and Magazines," illustrated with various examples of magazines, &c.

A paper on "The North-east Coast of British New Guinea and Adjacent Islands," by Mr. J. P. Thomson (see page 57), a letter from Mrs. F. Moir to Mr. Gilbert Beith on "The Perils of African Travel" (see page 72), and several letters from Corresponding Societies, &c., were read. Thanks to the writers of the papers and to the Chairman concluded the meeting.

The 151st Meeting of the Society, held in the Memorial Hall, Friday, Feb. 27th, 1891, at 7-30 p.m. Mr. MARK STIRRUP, F.G.S., in the chair.

Mr. J. MURRAY MOORE, M.D., F.R.G.S., addressed the members on "New Zealand." (See page 19.) The address was of great interest and value, and was illustrated with some curiosities, including volcanic rocks and dust, maps, and a large collection of very fine lantern views.

A number of questions having been asked, and replied to fully by Dr. MOORE, a very hearty vote of thanks was passed for the admirable and instructive address. Dr. MOORE responded; and thanks to the Chairman closed a most interesting meeting.

The 152nd Meeting of the Society, held in the Memorial Hall, Wednesday, March 4th, 1891, at 7-30 p.m. The Rev. L. C. CASARTELLI, M.A., Ph.D., in the chair.

Mr. FREDERIC H. BALFOUR, of China, addressed the meeting on "Chinese Secret Societies." (See page 40.)

Mr. R. J. KERR proposed the hearty thanks of the meeting for the able and interesting address on a subject little known to many persons, but of great practical interest to all those who have any personal dealings with the Chinese.

Mr. P. MACLEAN seconded the motion, giving some personal reminiscences of his own whilst in China in connection with the subject of the address.

The motion was supported and carried unanimously.

A number of questions having been asked, Mr. BALFOUR replied and responded to the vote of thanks. Thanks to the Chairman closed a very valuable meeting.

The 153rd Meeting of the Society, held in the Memorial Hall, Friday, March 13th, 1891, at 7-30 p.m. Colonel MELLOR in the chair, in lieu of Sir E. W. Watkin, Bart., M.P., who had been detained in London on imperative business.

Professor W. BOYD DAWKINS, M.A., F.R.S., addressed the meeting on "The Channel Tunnel." The address was illustrated by a large number of maps and sketches, and small maps were distributed to the members present.

A number of questions were asked and replied to, and a very hearty vote of thanks was moved by Mr. Councillor BOSDIN T. LEECH, seconded by Mr. J. B. SHAW, and supported by Mr. E. W. MELLOR, for the admirable address, to which the Professor responded. Thanks to the Chairman closed the meeting at a late hour.

The 154th Meeting of the Society, held in the Memorial Hall, Friday, March 20th, 1891, at 7-30 p.m. Mr. MARK STIRRUP, F.G.S., in the chair.

Major R. F. BALLANTINE addressed the members on "The West Indies: the History, Geography, Natural Resources, Trade, and the Value of the Islands to Great

Britain." The address was illustrated by a large number of lantern views, and by a large map prepared by the Victorians.

Votes of thanks to Major Ballantine for his most interesting address and to the Chairman closed the meeting.

The 155th Meeting of the Society, held in the Library, on Tuesday, March 24th, 1891, at 7-30 p.m. Mr. William Ure in the chair.

The Secretary read portions of letters of a most distressing nature received from correspondents on the Congo.

Mr. R. C. Phillips spoke on the subject.

Mr. F. G. Burton addressed the members on "Mexico," illustrating the address with a number of photographs collected during his recent journey.

A considerable discussion ensued, and Mr. Burton replied to some questions.

Thanks to Mr. Burton for his brilliant paper and to the Chairman brought the meeting to a close.

Two Years Among the Savages of New Guinea, with Introductory Notes on North Queensland. By W. D. Pitcairn, F.R.G.S., &c. 286pp. Map and Vocabulary of the South-East Coast Natives of New Guinea. London: Ward and Downey. 1891.—Mr. Pitcairn has spent about eleven years in North Queensland and New Guinea. He appears to have been engaged in trade, and to have had intimate relations with the natives. His estimate of some of the natives is a low one, particularly of the North Queensland natives. Whether it is well to write of them as "snakes in the grass," which "should be trodden under foot," is questionable. The language of the book is quite free, and sometimes strong. No doubt Mr. Pitcairn writes feelingly. His description of the life of the Woodlarks and the reception he had with his companions is interesting. The incidents of voyaging in a small craft are exciting, and the light thrown on native customs, the scenery, on the relations of the natives with the planters and traders, and the concluding chapter on the Geology and Natural History of New Guinea, with the Vocabulary, are valuable. Mr. Pitcairn gives a description of the Morgan Mine, in Queensland, of the value, as he estimates it, of £10,000,000 sterling, and of the riches of the country in tin, which is enough, one would think, to send us all off to try to get some of this abounding wealth of the country. His ideas on labour are such as, no doubt, are largely held by planters, and we seem to be interviewing an old idea, when, after a description on sugar-growing and its difficulties from the heat of the climate and scarcity of labour in Queensland, he says: "Taking these facts into consideration, I consider the policy of the Government in prohibiting black labour to be suicidal and foolish." If sugar-growing is all that humanity is intended for it may be true. The book is very interesting. Mr. Pitcairn has given us his unvarnished view, with the result of his experience of these interesting parts of the world. And whilst we should not probably agree with a good many of his opinions, the book is one which will be greatly enjoyed by those who read it, and the facts stated cannot help being very valuable as coming from a competent observer, who has written down his observations and opinions. The map adds value to the volume.

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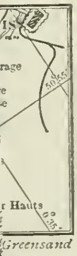

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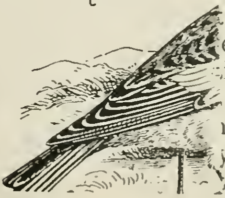
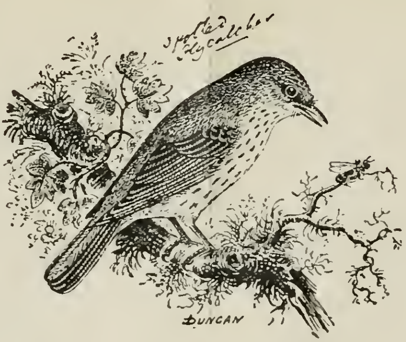
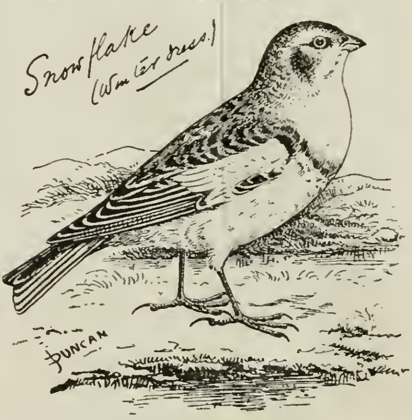
Snowflake
(Winter dress)





Ford Bridge
with a view of Flodden Field in the distance



SKETCHES FROM THE "NEWCASTLE WEEKLY CHRONICLE."

THE JOURNAL

OF THE

MANCHESTER GEOGRAPHICAL SOCIETY.

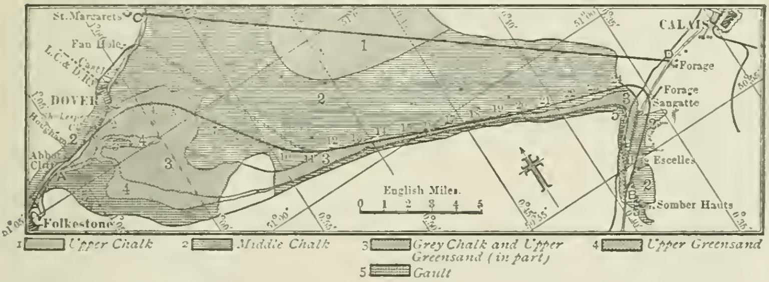
THE CHANNEL TUNNEL.

By Professor BOYD DAWKINS, F.R.S., M.A., &c.

[Addressed to the Members, in the Memorial Hall, Friday, March 13, 1891, at 7-30 p.m.]

ON the Channel Tunnel question a great deal may be said from almost every point of view. When you consider the bearing of the question on geography, it seems by no means undesirable that it should be treated of before this Society.

SKETCH-MAP OF CHANNEL FROM DOVER TO CALAIS.



You know very well that commerce and the knowledge of geography went hand in hand, and this question is not merely a commercial or military question, but is essentially a geographical question. The lecturer proceeded to describe the development of the "silver streak." In geological history the period was not remote when England was absolutely a part of the Continent. It was only in the Pleistocene age that the North Sea and the Atlantic met at the Straits of Dover. The insularity of Britain had, of course, had a very great effect on the national character, and as it seems not altogether a good effect. One way in which our insularity had worked upon us had been our isolation from contact with the Continent. This had made us particularly British, and more or less Philistine, in our views; we were shut off from other men, and were more or less in the position of Pharisees, looking on ourselves as better than other men. At the same time, it was an undoubted fact that the insularity of this country had been a great bulwark, and had relieved us from being obliged to maintain a large standing army, as on the Continent. In his opinion, our insularity was a serious barrier to trade. As time went on, and the necessities of rapid intercommunication grew more and more—with the development of steam and of telephonic and electric communications—the insularity of this country would be felt in greater measure. From that point of view it was of the utmost possible importance that we should bring ourselves into contact with the Continent as quickly as possible. Then came the question—How can it be done? In his opinion, it could be done without affecting anything that is good in our insular position one whit. It is really absurd to be told by this writer and that distinguished general that if there were a tunnel the country might be exposed to all the horrors of a standing army like that of France or Germany. It is ridiculous to imagine that a hole a few feet in diameter is to be compared with such a frontier as that which exists between France and Germany. Consider what is now taking place in France, Germany, Italy, and Switzerland. Pains are being taken to pierce the barriers which separate these nations from each other, yet, as far as he knew, there is not a word heard on any side of danger to the countries concerned. It was an eminent German general who declared that the idea of an invasion through a tunnel was absolutely absurd. Professor Dawkins referred to some Channel Tunnel schemes which were promoted before the present one. The first scheme was started in the days when Napoleon was First Consul, and in 1854 and 1868 the idea was revived. There had also been proposals to place a tube across the Channel and to build a bridge across, though to some people that seemed hopeless from a navigation point of view. The lecturer next showed that the formation of the rocks was very favourable to the construction of the tunnel. Both on the part of French and English engineers a great deal of trouble had been taken in examining the strata, and there was no possible doubt that the grey, impervious rock was splendidly suited to the purpose. The English Government had not always been against the scheme. A convention was written out, and the French Government signed it; the English Government agreed, but did not sign. Referring again to the strata, the lecturer said the inclination of the rocks was exceedingly gentle. It was something like 1 in 72 on the English side, while on the French side it was in some places as high as 1 in 42. This fact was greatly in favour of the engineers. The slope of the rock was exceedingly small, and the material was most excellent for the purpose. The argument that Providence ordained this country to be an island, and that it should not be connected with the Continent by a tunnel, altogether fell to the ground, because, as they would see, Providence had arranged the rocks in such a way as to make them most admirably adapted for the construction of a tunnel. Dealing next with the engineering question, the lecturer showed that the grey chalk, through which the tunnel is proposed to be cut, is like a very hard cheese, perfectly easy to cut, and fitted to stand well. The boring which had taken place showed that, notwithstanding the faults which undoubtedly existed, the tunnel could be made without risk of water rushing in and wrecking the works. The machine that had been used in the boring was driven by compressed air, by the use of which compressed air all difficulties with regard to ventilation might be at once dismissed. Professor Dawkins was perfectly familiar with the atmosphere in the tunnel, and could testify that it is far purer than the atmosphere of most drawing-rooms with which he was acquainted. Not merely the ventilation but the temperature could be efficiently regulated. Referring, in conclusion, to the commercial aspect of the matter, the lecturer spoke of the isolated position this country at present occupies in relation to the trade of the world, and predicted that if we did not do something to prevent our being cut off from the main current of commerce on the Continent, we should beyond all doubt lose a very large part of our commercial supremacy. That danger could only be overcome by a tunnel such as was suggested in the scheme now before the country. It was no mere question for the soldier or the literary man to discuss. It was a question which concerned every commercial man in this country. The military opinion against the tunnel at the present time was not an undivided opinion. There were certainly as good soldiers in favour of the scheme as there were against it. But he thought it was not to soldiers that we should go to ask whether this enterprise would or would not be good for the nation. Their business is to defend the nation, to act the part of protectors for the nation. If the commercial benefits which would arise from the enterprise are as great as it has been demonstrated they are, then the enterprise ought to be carried out, provided there were no counter-balancing military facts to be weighed against it. In his opinion, no such military facts have been alleged which are of the slightest value.

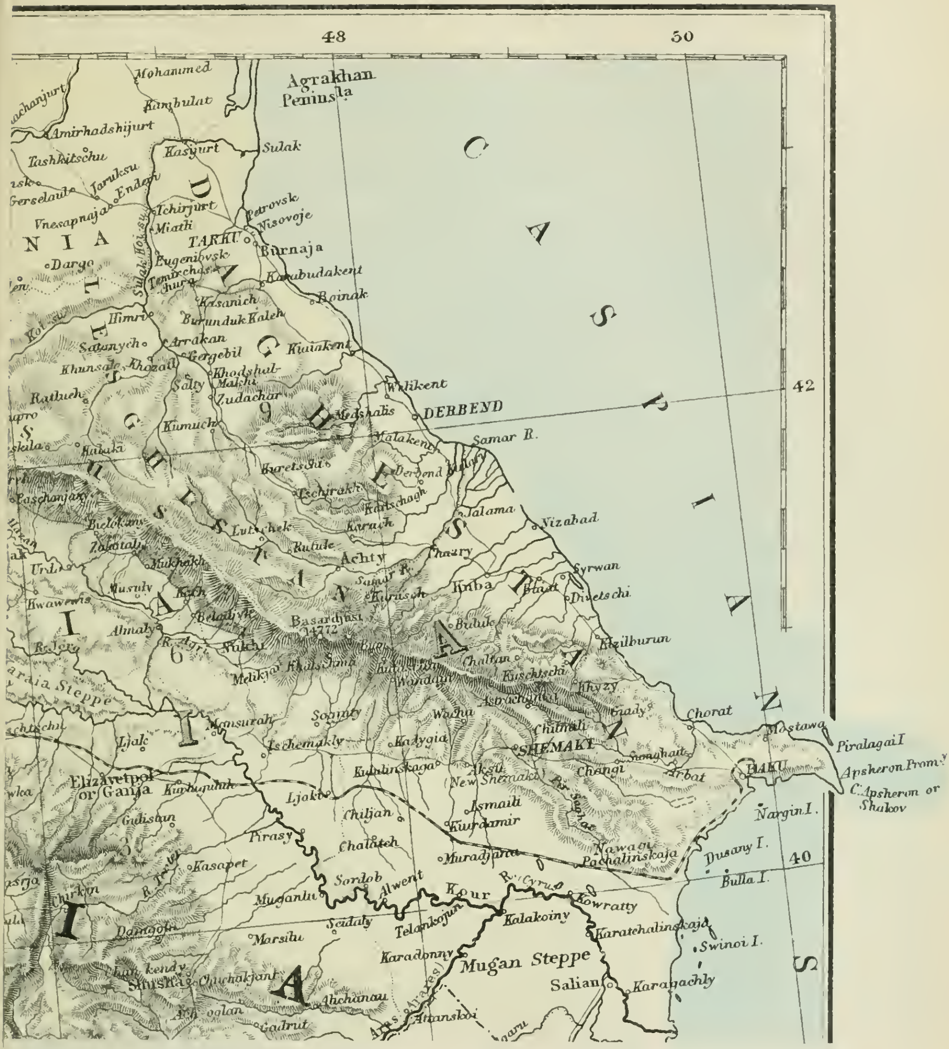
NOTE.—The question of a south-eastern coalfield is very important, and as it would appear that the borings have discovered valuable and workable seams, the value of the work done in connection with this question cannot be over-estimated. (See address on the subject to the Royal Institution of Great Britain, delivered June 6, 1890, Professor Boyd Dawkins in the chair.)

ARMENIA.—(*See Map.*)

By Professor MINASSE TCHÈRAZ, of King's College, London.

[Addressed to the Members, in the Memorial Hall, Wednesday, May 6th, 1891, at 7·30 p.m.]

THE historical limits of Armenia are very elastic. Its sovereigns, when they were not urged on by the thirst for conquest, remained generally satisfied with ruling the fifteen provinces of Greater Armenia; but some bellicose kings, among whom a few even took the ambitious title of *king of kings*, widened these boundaries in all directions. Moses of Khoren, the Herodotus of Armenia, says, without circumlocution: "The brave have no other limits than their weapons, which acquire as much as they cut off." Thus, then, in its periods of splendour, Armenia has generally been bounded by the Caucasus mountains, the Black Sea, the Caspian, the plains of Mesopotamia, and the banks of the Euphrates. From this vast volcanic plateau, the height of which varies between 2,700 and 11,000 feet, rise numerous watercourses, the most celebrated of which are the Euphrates, Tigris, Djorokh (Phasis or Phison), and the Araxes (Gehon?). These rivers, according to the Bible, came out of the terrestrial Paradise, a statement which gave rise to the tradition which places the cradle of the human race in Armenia. The mountain system of the country, enriched by the mighty offshoots from the Caucasus and Taurus, gives it an imposing aspect, and the Koords owe their wild customs to the inaccessible height of the Gortook chain, where their tents have been pitched from the remotest antiquity. What, however, constitutes the glory of this island of mountains, as Ritter called Armenia, is the majestic Ararat, which rises to a height of 17,212 feet, 1,431 feet higher than the most elevated mountain in Europe, Mont Blanc, and is, according to Olearius, used by the sailors of the Caspian Sea as a sort of polar star. Professor James Bryce, who ascended Mount Ararat in 1876, gives, in his "Transcaucasia and Ararat," a fine description of this classic mountain, where Eastern tradition and the Bible make Noah's ark rest. I visited Russian Armenia in 1888, and the monks of the celebrated monastery of Etchmiadzin, near Mount Ararat, showed me a fragment of the ark. I am not prepared to guarantee its genuineness. All I can say is that this piece of wreck appeared to be of very old and very solid wood, more solid, perhaps, than the legend connected with it. Armenia is, moreover, embellished by a number of lakes, among which the most



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50
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CASPIAN SEA
Agrakhan Peninsula
DAGHESTAN
TARKU
DERBEND
SHEMAKI
BAKU
Elizavetpol or Ganja
Mugan Steppe
Kour R. (Cyrus)
Samar R.
Basardjusi 14772
Apsheron Prom.y
C. Apsheron or Shakov
Piralagai I.
Nargin I.
Dusany I.
Bulla I.
Swinoi I.
Salian
Kuba
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Kasyurt
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Temirchan Shura
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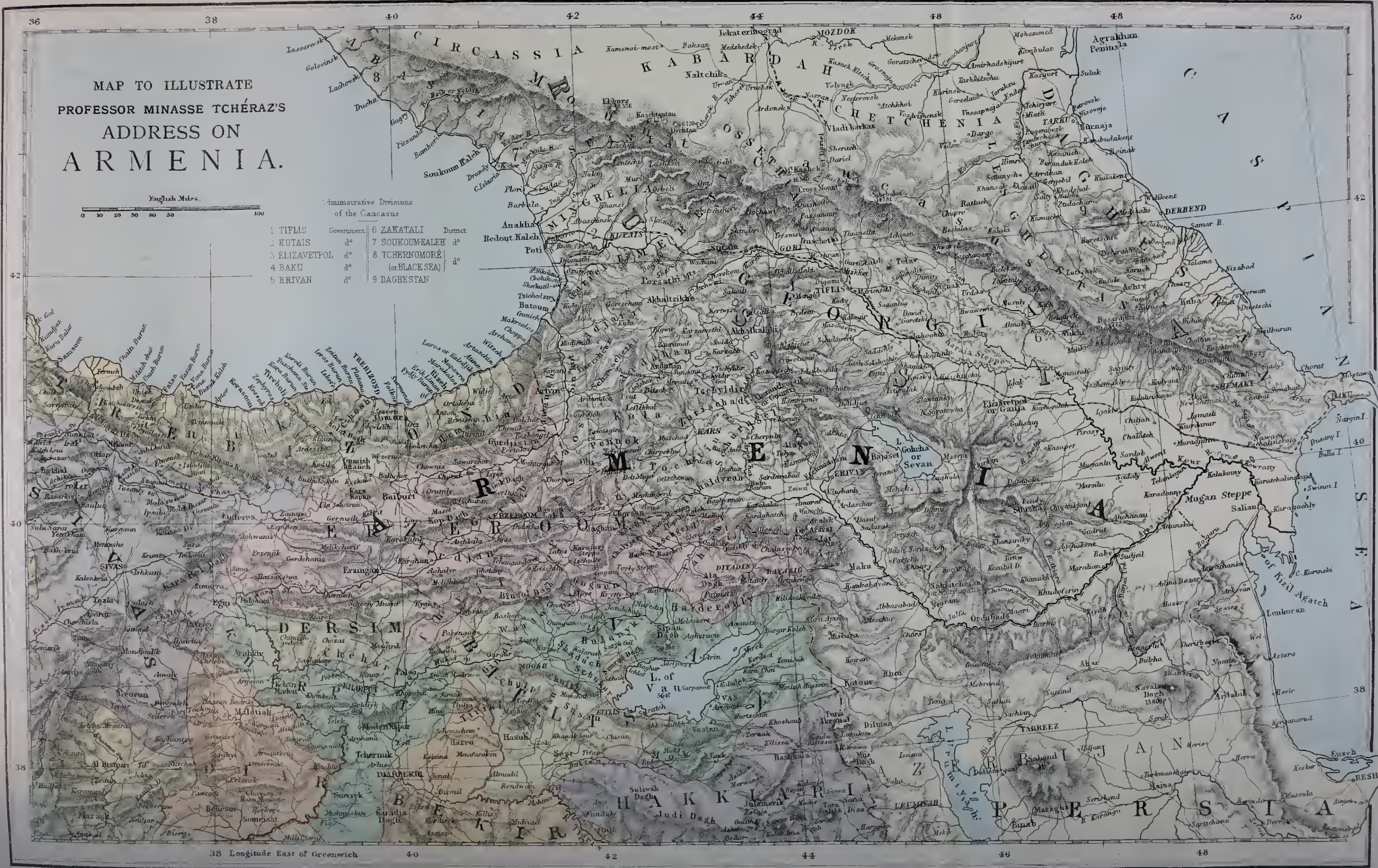


MAP TO ILLUSTRATE
PROFESSOR MINASSE TCHÉRAZ'S
ADDRESS ON
ARMENIA.

Administrative Divisions
of the Caucasus

1 TIFLIS Government
2 KUTAIS d°
3 ELIZAVETPOL d°
4 BAKU d°
5 ERIVAN d°
6 ZAKATALI District
7 SOUKOUM-KALEH d°
8 TCHERNOMORÉ (or BLACK SEA) d°
9 DAGHESTAN

Printed for the Journal of the Manchester Geographical Society by George Philip & Son, London and Liverpool.

noticeable are Lake Sevan, with an islet containing three monasteries in Armenian style; Lake Urumiyah, in Persian Armenia; and especially Lake Van, which receives the waters of some forty streams, and nourishes an immense number of herrings, a true manna for the people of the shore. With regard to climate and produce, Armenia is a kind of microcosm. Generally speaking, the northern portion recalls the arctic zone, the central portion assumes the aspect of the temperate zone, and the part which borders on Mesopotamia is as warm as a country situated in the torrid zone. Its produce is also similar. The valleys are extremely fertile, and present a very rich flora, all kinds of grains and cereals, rice, cotton, hemp, flax, gall-nuts, madder, tobacco, and delicious fruit, including the apricot, the *prunus Armeniaca* of the Romans. On the hills grow magnificent grapes, from which is obtained an excellent wine, the direct descendant of that wine which affected the head of our good Patriarch Noah. The mountains are not much wooded, but covered with luxuriant pastures, suitable for the breeding of cattle and the rearing of horses. The prophet Ezekiel tells us that the Syrians received their horses from Armenia, in the same way as the Hebrews for a long time obtained their mules from that country. Xenophon relates that this country supplied a contingent of 4,000 horse to the King of Assyria at the time of his war with the sovereign of the Medes. According to Appian, when Mithridates went to take refuge with Tigranes the Great, King of Armenia, the latter at once levied 50,000 horse as well as 200,000 foot soldiers, and afterwards 35,000 horse with 70,000 foot. Hammer quotes the fact that Hethoum, King of Armenian Cilicia, provided a contingent of 12,000 horse with 40,000 foot to his Tatar ally, Hulagu, at the time of the latter's expedition against Persia. These few figures bear testimony to a great abundance of horses in ancient and mediæval times, a source of wealth which a wise administration could restore to the countries whose natives formerly taught the Romans some novel ideas in the art of breeding horses. What is especially abundant in Armenia is bread and meat. The corn is of a superior quality, and it was from Armenia that the Romans received their provisions of salt meat. "At the present day still," writes M. de Tchihatchef in his "Bosphorus and Constantinople," "the salt meat of Kaïsaria and Angora is celebrated in the peninsula under the name of *pasterma.* It chiefly consists of mutton, which is of a splendid quality, and probably superior to all the salt beef produced by Europe and the United States of America." Van has its delicate white honey, and Moush its sweet manna, which the peasant women gather from the leaves of the trees. The ancient province of Vasbouragan is still rich in *ermine,* an alteration of *Armenia,* the name of the country from which the fur of this animal was originally obtained, and especially in the so-called Angora cats and goats. The cochineal is met with at the foot of Mount Ararat, and everywhere are mines of copper, iron, lead, silver, sulphur, arsenic, coal, even of gold, as rich as they are untouched, while the quarries are lined with marble and jasper, and the rock-salt, alum, naphtha, and the famous Armenian bole are only waiting on the surface for anyone who will take the trouble to pick them up. Here, then, is a country not so very far from Cyprus, where some of those Englishmen ought to emigrate who place the immensity of the seas between them and their mother country. By transferring their money and energy to Armenia, the sons of Great Britain would only have to choose among the thousand-and-one branches which commend themselves to their activity in a country where, as yet, scarcely a single factory chimney smokes, nor has a single railroad been opened by the fatalist government of the Turks, Persians, and even Russians, who have partitioned this Asiatic Poland.

THE HEIGHT OF MOUNT ARARAT.

Geographers do not always agree as to the height of mountains. The height of Mount Ararat is variously given as below :—

Keith Johnston	17,000	feet	Bryce, Jas..............	17,000	feet
„	17,210	„	„ (Parrot) ...	17,325	„
„	16,969	„	„ (Federof)...	17,130	„
Maunder	17,750	„	„ (Chozetta)	16,906	„
„	17,323	„			

BOOK NOTICES.

La Transcaucasie et la Péninsule d' Apchéron. Par Calouste S. Gulbenkion. Hachette and Co., Paris, 1891. 336 pp. Index and map.

This is a readable account of a journey from Constantinople through Batoum, Koutais, Tiflis, to Baku, with several chapters on the geological formation of the Baku Peninsula and the history of the oil industry and its value, with suggestions for its further development. There are seven tables giving the figures of the production of the oil and its products from 1877 to 1889. The narrative is graceful, and although we have often gone over the country with other travellers, a new observer of this interesting country is always welcome. The late Mr. Marvin's ideas of the magnitude and value to the East, particularly of this wonderful reservoir of oil, is more than justified by Mr. Gulbenkion, and it would seem that this old historical seat of the fire worshippers had in the near future as great a part to play in the development of great industries in the eastern as coal has already played in the development of the western world.

BRITISH TRADE IN CENTRAL ASIA.

By Professor ARMINIUS VAMBÉRY, of Budapest.

[Addressed to the Members, at the Athenæum, Friday, May 29th, 1891, at 7-30 p.m.]

ASIA has now become an open book, and we have only to turn its pages to get acquainted with the salient features of a country which was formerly a mystery. The lion's share in the exploration of the country belongs to the Russians, who, as the masters of Central Asia, have the best opportunity of investigating it in all directions. English travellers, actuated, if not by the desire of conquest, certainly by the necessity of watching the movements of their great northern rival, have accomplished a fair share of work along the southern frontier lines of Central Asia. Great changes have taken place since I saw the country 28 years ago. Peace and order reign where formerly war and anarchy spread ruin and desolation. The inhabitants, undisturbed in the enjoyment of the fruit of their labours, and in no way molested by the foreign ruler, are far better off than they were under the rule of their native princes. But with all my desire to do justice to the rule of the Russians in Central Asia, it is certainly the fact that their efforts are mainly directed towards the material benefits of the conqueror, and not to the education and enlightenment of the conquered. Out of the annual budget spent upon the administration of Turkestan, Ferghana, and Transcaspia, a disappointingly small sum figures for the expense incurred for the instruction of the natives, for hygienic measures, and for means calculated to scatter the thick clouds of superstition and ignorance which hover over the native masses of Central Asia. Russia has never shown a particular anxiety to raise the cultural condition of her foreign subjects to a higher level than necessary. Her object is to make them obedient tools of her rule, to absorb everything in her national body, and to exploit the country in every possible way for her own material and economical purposes, without remunerating her taxpayers with the real boons and blessings of our Western civilisation. In summing up the reports and accounts of recent travellers in Central Asia, I find the economical value of Russia's acquisitions to be far greater than I had anticipated. The productive power of Central Asia, as proved by the continually increasing export of raw material, is really astonishing. While the export trade from the khanates in the decennial period 1840-50 amounted to half a million per annum, and the import trade from Russia to about the same amount, in 1888 Bokhara alone had 12,000,000 roubles of export and 10,600,000 roubles of import, omitting entirely the considerable trade carried on between Khiva, Ferghana, and Eastern Turkestan. This unparalleled increase of commerce is the best evidence of the fertility of the soil of Central Asia, and if you inquire into the details you will be even more surprised by seeing how useful some of these products will prove, in the near future, for the development of Russian industry, and how her trade will seriously threaten British commerce along the whole line of her progress in Asia. I call attention, in the first place, to the growth in cotton, a material for which Russia had sent out of the country during the period between 1880 and 1885 more than 500,000,000 roubles. The continually increasing product in Central Asia has enabled her to diminish that sum greatly and to dispense to a large extent with American, Indian, and other cotton; and she nourishes the hope that she will be able in the near future to supply her wants entirely from Central Asia. In 1887 Russia imported from foreign countries 1,856,000 cwt. of cotton, of the value of 96,437,000 roubles, and in the following year this had diminished to 1,373,000 cwt., of the value of 83,000,000 roubles, which was very natural, if we consider the gradual increase of the export of cotton from Turkestan into Russia. What I have said with regard to cotton applies also to silk, corn, rice, fruits, and other products. The greater the increase of raw products the brisker becomes the Russian import trade. It is easy to understand that the export from Russia would keep an equal pace with the import from Central Asia, and that the new conquerors of the country must soon get the anticipated monopoly along the whole line extending from the Thian Shan range of mountains to the shores of the Caspian and the Black Sea. Nobody would or could grumble at this natural outcome of commercial ascendancy. But a point worth our full consideration is this, that Russian trade does not content itself with a monopoly on the Czar's own grounds, but that it stretches far into neutral territory and seriously threatens the commercial interests of others, and particularly of England. It is not for the first time that we are apprised of this sad state of affairs. For years and years we have seen how British trade has been receding before its Russian rival in North Persia, and quite recently also in Afghanistan. Sugar, chintzes, muslin, and iron wares are the staple articles with which Russia is beating England in the market. In discussing the question of commercial competition between England and Russia in Central Asia we should not lose sight of the fact that it is not in quality of goods or in commercial spirit that Russia is superseding her rivals, but rather by facility of communication, a more favourable geographical position, and, above all, through the greater assistance rendered by Government to private enterprise. The Asiatic is always able to distinguish and appreciate the better material and the superior quality of English goods as compared with those of Russian manufacture; but the Russian manufacturer takes greater care to satisfy the tastes and wants of the Asiatic. I cannot but reproach the English manufacturer for his utter carelessness and negligence in this respect. How many firms in Manchester, Birmingham, Sheffield, Bradford, and other places have hitherto sent agents to the interior of Central Asia to get thorough information about the favourite patterns of the Sarts, Ozbegs, and Turcomans? How many English firms know precisely the width and breadth of the stuffs required for the special cut of the native dress? Such information is necessary in order to keep up the good reputation of English articles and to beat their rivals. Summing up my experience, I find that the main cause of Russian success is to be sought in the facility of communication, and particularly in the opening of the Transcaspian Railway. The puffing camel will soon be doomed to the short distances of local traffic and the agricultural service. Security of roads and quickness of locomotion are indispensable for English trade in the present circumstances; and under these conditions there is no other outway but the opening of railway communication between and to those places in Persia or Afghanistan from which the English merchant would be able to provide the Central Asian markets with the same ease and security that the Russian trader now finds in the Transcaspian Railroad. I cannot but remark the placidity with which the English public views the retrogression of British trade in Central Asia, which is not encouraging for the future of England's imperial position in Asia; for I see in the loss of each market place the crumbling of a stone in that great and magnificent structure which your ancestors have raised to the benefit of this island and to the glory of Western civilisation in the Old World.

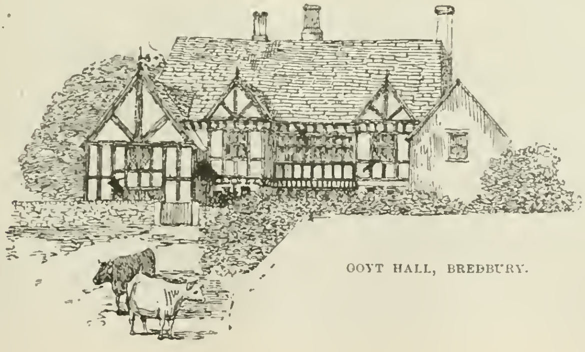
THE SIBERIAN RIVERS.

THE following note on the Siberian Rivers, by Prince Krapotkin, from the *Manchester Guardian*, is interesting:—

It is known that Siberia has a wonderful network of navigable rivers. The like is only found in the United States of America. Though nearly all flowing north into the Arctic Ocean, the great Siberian rivers have tributaries in the southern and peopled parts of Siberia which allow navigation over immense stretches from west to east. That is what has rendered the colonisation of Siberia so easy, and that is what permits the Government now to establish communication over a territory which covers from west to east more than 90 degrees of longitude—that is, one-fourth part of the earth's circumference. Until within the last few years, however, navigation on Siberian rivers was in its infancy. Five and twenty years ago there were not fifteen steamers plying on all the Siberian rivers, and during my stay in the country I had to travel along its beautiful water highways either in small boats propelled up and down by oars or in awkward and ugly barges floated with the current. In 1865 I myself saw no less than 44 barges, carrying 3,500 tons of corn, salt, and all kinds of goods—so necessary for the lower Amur—destroyed in one single night by one of those terrible typhoons which are but too common in the coast region of the North Pacific. However, during the last few years navigation has rapidly developed on the rivers of Siberia, especially in the west, and by the time the Siberian railway is ready it will have seriously to compete with the steamers which will be swarming on the rivers. The port of Tumen, situated on a tributary of the Obi, is now connected by rail, across the Urals, both with Perm, on the chief tributary of the Volga—the Kama—and with the chief ironworks of the Urals, so that steamers built in these ironworks have only to be transported by rail to Tumen to begin navigating over the immense territory watered by the Obi and its numerous navigable tributaries. Tumen has thus become the chief port of Western Siberia, and it is in regular steamer communication with Tomsk, the capital of Western Siberia, with Barnaul and Biysk, in the Altai region, with Omsk and Semipalatinsk, amidst the steppes of Southern Siberia, and with Atchinsk, on the frontier of Eastern Siberia. It appears from a recently published list that 64 steamers, representing an aggregate of 4,000 indicated horse power, are now plying in the basin of the Obi. They take 162 barges in tow, and transport every year from 25,000 to 35,000 tons of goods from Tumen to Tomsk. In case of need it would be easy to transport in one summer 75,000 tons of goods along this line. The newly-built steamers are of excellent workmanship. The last addition to the Obi fleet is a two-storeyed "American" system steamer, the Nikolai, of 170 horse power, lighted with electricity and supplied with every convenience and comfort. It was built in the Urals, and has already begun its trips between Tumen and Tomsk. Passengers are transported along this line in eight or nine days, and goods in two or three weeks, at a cost which does not exceed six roubles (12s.) for the deck passengers, and 40 copecks (10d.) for 36lb. of goods. The freight would be reduced to 36 copecks (9d.) the cwt. if a considerable amount of goods had to be carried for a number of years. The navigation lasts for more than six months.

A strip of land some 200 miles wide, but intersected by many smaller rivers, separates the tributaries of the Obi from the Yenisei, which is almost regularly visited now by steamers coming from Newcastle and London. That strip of land is pierced by a small canal, and two small boats have been taken from the Yenisei into the basin of the Obi; so there is no doubt that some day soon a sluiced canal available for steamers will connect both rivers. The number of steamers plying this year on the Yenisei is not known, but a few years ago there were only six steamers plying below Yeniseisk, and a couple of light steamers maintaining communication between Krasnoyarsk and Minusinsk, on the upper part of the Yenisei, separated from its lower course by rapids. Nine steamers ply on the Lena and its tributaries, but twice or thrice as many are already wanted. But the Lena has no ironworks worth speaking of on its banks. There is plenty of iron, but no technical skill; and no enterprising Yankee has yet tried to bring it into regular communication with San Francisco *via* the Behring Strait. Unfortunately a series of rapids on the Angara, or Upper Tunguska—a tributary of the Yenisei—prevent a regular navigation being established up that river as far as Irkutsk. But recent exploration has shown that the removal of these obstacles would not be at all costly, and they certainly will be removed as soon as necessity arises. But there would still remain a stretch of 40 miles between Irkutsk and Lake Baikal, upon which the Angara flows as a furious stream after its issue from the great lake, and upon which navigation will not be possible until very expensive waterworks, with sluices, are provided. Next comes Lake Baikal, with its two tributaries, the Upper Angara and the Selenga, which are navigable—the lake for 205 days every year, and its two tributaries for respectively 212 and 190 days. Three steamers and six barges, capable of carrying 550 passengers and 1,100 tons of goods, and 20 sailing boats, navigate the lake. Three steamers more, with eight barges (850 tons), ply up the Selenga, which was considered some thirty years ago as absolutely unavailable for navigation. Four steamers ply up the Upper Angara, a river leading to the wildest mountain tracks of Siberia, and to their gold mines. Lake Baikal and the Selenga bring the traveller some 200 miles further east along the great highway which leads to the Amur ; but now comes a stretch of some 200 miles more, between Verkhnendinsk (the port of the Selenga) and Tchita, the capital of Transbaikalia, founded in 1851 on one of the upper, partly navigable, but very shallow, tributaries of the Amur. This space can be bridged with the greatest facility by a railway, but it never can be intersected by a canal, owing to the great height (3,000 to 4,000 feet) of the plateau which separates the two river basins in Transbaikalia. Besides, the navigation on the stormy Lake Baikal, which requires sea-going steamers, and on the shallow Selenga, which admits of no steamers of more than three feet draught, though very useful for local purposes, can never become available for a great transit line ; so that a railway will have to be constructed between Irkutsk and Tchita, or rather Sretensk, over a distance of more than 800 miles. But such a line, which would have to cross the very thinly-populated province of Transbaikalia, cannot be expected to be completed soon. The high plateau of Central Asia continues to stand in the way, just as it has stood for centuries past in the way of the Russians in their slow advance towards the Pacific.

As to the Amur and its tributaries, which remain open to navigation for from 190 to 220 days every year, the means of communication are still very imperfect. Over this immense water-artery, 2,000 miles long, only 45 steamers (2,800 horse power) and 42 barges, representing an aggregate tonnage of about 10,000 tons, are plying very irregularly. But the banks of the Amur are being rapidly colonised, especially by such staunch agriculturists as the Dissenters of South Russia, who seek in the Far East protection from military service and religious persecution ; and the fleet can easily be reinforced by craft built in America, or even in Transbaikalia itself, which only wants more engineering skill applied to its ironworks. Altogether Siberia can thus boast of having now a fleet of 134 steamers, with about 240 barges, representing a tonnage of about 40,000 tons, plying on its rivers for from six to seven months every year. All this is of quite recent growth, the rapidity of which is astonishing even to those who closely watch the development of the resources of Siberia.



OOYT HALL, BREDBURY.

YORUBA.

By Mr. ALVAN MILLSON, M.A., F.R.G.S., a Corresponding Member of the Manchester Geographical Society.

[Addressed to the Members, at the Manchester Chamber of Commerce, Friday, June 5th, 1891, at 3 p.m.]

WHEN, in the year 1869, the great African traveller, Gerhard Rholfs, at the close of his memorable march across the northern portion of the Continent, crossed the Niger and traversed the rich lands that lie between that river and the Guinea coast, he found the Mohammedan merchants of the Soudan trading with the people of Yoruba in European goods which had been transported across the great Sahara Desert and through the populous Houssa states to the city of Ilorin. In other words, not more than a quarter of a century ago it was a more paying speculation to carry the *tarboushes* of Vienna and the silks of Lyons two thousand miles on the "ships of the desert," amidst the innumerable difficulties of such a route, than to bring them from the neighbouring port and waterways of the colony of Lagos, through less than one hundred and fifty miles of fertile and well-peopled land. It was possible then to maintain the paradox that, commercially speaking, Ilorin was nearer to the Mediterranean than to the Bight of Benin.

It will perhaps surprise you to learn that, although the enterprise of European merchants in the Niger has rectified the evil in so far as Ilorin and the interior is concerned, it is still the case that the powerful nation of Yoruba, with its 400,000 families of industrious cultivators of the soil, is hopelessly cut off in every direction from all but the most insignificant driblets of European trade. For during the past fifteen years its northern frontier has been constantly harassed by the inroads of the Mohammedans, who have made Ilorin their centre of operations towards the south, and by this renewed pressure from the north the inhabitants of Yoruba have not only been cut off from their former sources of supplies in that direction, but have also been forced to submit to the exactions and commercial blockade of their weaker kinsmen who inhabit the neighbourhood of the gulf lagoons. These tribes, with true African blindness to consequences, harass in every way the Yorubas in their efforts to drive back the Fulah conquerors—for upon them alone rests the burden of the defence of the coast to which their country forms the only approach suitable to cavalry conquest—curtail the supplies of guns and powder upon which their safety depends, demand exorbitant prices for such articles as they condescend to allow them to purchase, and to the best of their ability avenge themselves for former oppressions at their hands. Not only do they by this means endanger the safety of their own land, and diminish a trade which should be a source of prosperity to all, but they inflict a serious injury upon our trade by cutting us off from commercial intercourse with the most important market of West Africa.

I do not propose to pronounce upon the legal right of these tribes to adopt their unusual attitude, for which they have doubtless a good historical defence, nor do I wish to advocate the adoption of any but peaceful measures for the removal of this commercial blockade. It is my intention to place before you as clearly as possible the causes of this unfortunate condition of affairs, and to describe the advantages which would accrue to all parties were the rich lands and busy markets of the populous interior of Yoruba thrown open to commerce.

When old John Hawkins, in the reign of good Queen Bess—from whose days date so many of our good and evil deeds—compounded with his somewhat weather-beaten conscience, and, fortified with much misplaced Scriptural authority, ran the first cargo of slaves from the West Coast of Africa to the West Indies, he flung asunder the doors of that vast storehouse of slave labour which lies between the great arch of the river Niger and the Guinea Coast. The ceaseless surf which foams in upon the long slave shore made landing difficult to all white adventurers, fever desolated their ranks, and buccaneers swept the seas over which they sailed; but, in spite of all, the trade in human beings throve steadily for nearly three hundred years. The trade winds which blew so charmingly to the north and south of the equator might be called without exaggeration the "slave-trade winds," for without the rapid passages which their help insured it would have been impossible to carry on a trade in such perishable articles as human beings.

It is not wonderful, under the circumstances, that a horror of the white man should have possessed the natives. To what terrible representatives of the white races were they introduced, and how monstrous was the effect of the meeting! Parents, led away by lust of gain, or of drink, or of the power of arms, sold their children, husbands their wives, and brothers their sisters. The temptations of the trade destroyed family affection, and spread civil war among the fickle Africans. Nor are they without excuse in the greatness of the power to which they yielded. Let us imagine for a moment what would be the result of exposing the people of England to so terrible a temptation. Joys which seemed to them to be of heaven, and power unlimited, were offered to, and indeed forced upon, the natives for one price only and one return.

For an African the products of civilisation are more wonderful in their attraction than we can possibly conceive, and the desire to possess them is sufficiently strong to blunt all sense of right. In each separate tribe the fear of the treachery of those among them who pandered to the slave trade can only be compared with the terror inspired by the Inquisition in Spain, while between the tribes arose innumerable slave wars which rapidly desolated their boundaries and led to complete commercial isolation. The attractions of this terrible traffic consolidated the more inland tribes, and brought them down in conquering masses towards the coast. By it were built up the great marauding kingdoms of Ashanti, Dahomey, and Yoruba, and from it rose the exclusive middleman system which rules the commerce of West Africa.

In this mad struggle for wealth—if, indeed, drink and the means of mutual destruction can be given such a name—the southern tribes failed to notice the silent growth of the Mohammedan power in the Soudan under the influence of the fanatical followers of the prophet Sanusi. Yoruba, which once extended to the Niger, and could boast of a hundred thousand horsemen, as it moved steadily towards the coast, driving the Ijebus out of their ancient lands, and giving them an excuse for their present policy of reprisal by commercial siege, was in its turn weakened by Mohammedan encroachments from the north, and but for the efforts of the powerful sub-tribe of the Ibadans it would have been desolated and destroyed.

It may be said that the slave trade could not have sprung up had slavery not existed in the land, and that slavery among Africans always involves slave raids, intertribal wars, and commercial isolation. This is to some extent true, and there is no doubt that in this part of Africa there will always exist a tendency to slavery and slave wars, owing to the necessity for polygamy among a people whose children cannot in infancy be reared in a healthy manner on the food of the country, and whose mothers are consequently forced to submit to isolation and devote themselves to their infants for at least three years after child-birth. In pursuance of this rigid custom, which has all the fixity of a religious observance, and a departure from which involves shame and loss of reputation, the mother is obliged to forsake her husband, and to return to her parents' house during the early years of her child's life. The result is to be seen in a race of remarkably healthy children, but the natural outcome is polygamy, and a consequent demand for more women than the tribe can produce. From this custom slavery and slave raids must have had their origin among the Yorubas, but there is no doubt that with the sudden opening of a practically unlimited market for captives the trade and its horrors were increased a hundredfold. There is unfortunately equally little doubt that the habit of war and slave-capture still prevails, divides the tribes by mutual fear, cuts them off from the coast markets, and desolates the land; for there are now established throughout the interior two forms of currency, the one of which for retail purposes takes the form of cowries, or beads, or brass rods, while the other, slaves, is used for larger transactions at greater distances. A slave, be it remembered, combines the security and portability of a bank-note with the carrying power of a pack-horse. With a little food and water, very little rest, and plenty of beating, he will transport himself and his master's goods for thousands of miles through the interior of Africa.

In pursuit of their wars and expeditions there has grown up a love of display among the chiefs and rich men of the Yorubas, which is mainly indulged by the possession of numerous slaves and valuable horses from the Soudan. These horses, far superior in size and quality to the lowland ponies of Yoruba, are sold at fabulous prices, varying from three to seven young slaves (£30 to £70). The result of this is that the slave markets, since they have been suppressed on the Atlantic coast, have been transferred to Central Africa, and a market for enslaved captives is to be found among the horse dealers of the Soudan, whose emissaries frequent the war camps of the contending tribes. These slave are either trained up by their purchasers to war against their old masters, are distributed among the chiefs of the interior, or sent across the desert to the harems of the north. To supply the home market and to satisfy this demand absorbs a large number of captives. Each year Dahomey marches out against some weaker neighbour, while the Ibadan Yorubas carry on intermittent slave wars in spite of the necessity for concentrating their forces on their northern frontier, and even the young men of the less powerful Egbas, Ijebus, and Ijeshas indulge in a little slave catching on the public roads.

All this is very bad for commerce, and the result is that the trade routes to the interior are, with few exceptions, closed to traffic, and that it is more difficult for a Lagos trader to penetrate beyond the coast line than for a Mohammedan of Tripoli to traverse the Desert of Sahara.

The general insecurity of property on the borders of these tribes may readily be imagined. Their cities are surrounded by walls and ditches, a large proportion of their young men follow the business of war, and all able-bodied men are liable to be called out to protect their homesteads. In spite, however, of these drawbacks, Yorubaland is well and widely cultivated, thickly inhabited, and full of local commercial activity. Its advantages may best be realised by comparison with one of its neighbours.

Leaving Lagos in a launch or stern-wheeler, some four hours' steaming to the eastward along the inland waters brings one to Ode Ketu, the main landing-place for the interior. From Ode Ketu, sixty-two miles of the northerly trail, or about fifty miles as the crow flies, lie through a forest land, of which the northern half is a "no man's land" dividing the kingdoms of Ijebu and Yoruba. In a clearing of this forest lies Ijebu Ode, the capital of the first-mentioned tribe, a town 16½ miles by trail or about 10 miles in a straight line from the lagoon side. The size and importance of this place, as well as its distance from the coast, have in the past been much miscalculated. The usual estimate of its population is given as 40,000, but it is now supposed to be not more than 13,000, of whom nearly all the able-bodied men are scattered on trading expeditions through the interior; for the Ijebus have carried the "hinterland" doctrine to its logical conclusion, have established an absolute monopoly of northern trade, and have, in short, constituted themselves middlemen for the interior. No Yoruba is allowed to pass through their country to the coast for trading purposes, on pain of the loss of all his goods; and no trader from Lagos or elsewhere to the south is permitted to penetrate into their territory. They have, indeed, a somewhat boastful but, let us hope, metaphorical proverb, "The stranger who enters Ijebu in the morning is sacrificed in the evening." Besides the capital there are no towns of importance in the Ijebu territory on this road, except the toll-town of Oru, some thirty-two miles by trail from the lagoon.

At this town, the most northerly in the Ijebu country, I had an opportunity of studying the African toll-gatherer in all the glory of his abusive insolence. On the pretence that one of my men who was walking in front of me had desecrated the sanctity of the toll-gate by allowing one of the irrepressible bantams, which he was carrying in a basket on his head, to commit the offence of crowing, the gentleman in charge rushed out and laid hold of the carrier, declaring that he had forfeited his liberty. We were, of course, greatly amused, and passed on without replying to his impertinence. As this happened in spite of the fact that we were a powerful party travelling under the direct protection of the king of the country, I was able to form an estimate of the liberties which these men must allow themselves to take with poor and defenceless travellers.

For over thirty miles beyond Oru the road winds on through a deserted forest land, well watered by perennial streams, and covered with a soil of unusual fertility. This strip of "no man's land" stretches between the boundaries of Ijebu and Yoruba for over a hundred miles in length and thirty miles in width, and is a fair example of the way in which the marches of all these native states are deserted.

At Odo Ona Kehere, 62 miles by trail from the lagoon side, a small stream is passed on the edge of the forest, and on its further bank stands a village which marks the entrance into Yoruba. At once the trees give way to well-kept farms, the country from horizon to horizon is cleared of all but the dark lines of greenery which indicate the channel of some watercourse across the landscape, and the oil palms, dotted over the land in numbers of from 12 to 30 to the acre, serve to show where in olden days the thick woodland has been destroyed by the axe and fire of the farmer. Among the palm trees, as far as the eye can see for the hot haze which twists and distorts all distant objects, are well-cleaned patches of cassava, maize, yams, sweet potatoes, ground nuts, benni seed, beans, tobacco, gourds, egusi, millet, and cotton. Of these the yams are trained on tripods made of rods some 12ft. high, the maize is planted between the yam hills, and cotton and beans grow among the maize. It must, indeed, be a fertile land to produce such a rapid rotation of crops; for after three or four years of such exhausting work the soil is rarely allowed to rest for more than two or three years, during which short fallow time a tall and reedy grass, from 6ft. to 12ft. high, is allowed to cover the surface. And yet, in spite of this exhaustive culture, to assist which no manure or plough is used, the crops show no signs of falling-off in size or quality. For generations, and perhaps for centuries, the same soil has supported its owners. So remarkable is the rapidity with which it recovers, that it may interest you to hear the following explanation, which I quote from notes made on the occasion of my visit to the country last year:—

"Were one to visit Yoruba during the early part of the rainy season only it would appear impossible to account for these facts . . . while under our feet, unnoticed, was going on the ceaseless labour of the real fertilisers of the land. In the dry season the mystery is at once solved, and in the simplest and most unexpected manner. The whole surface of the ground among the grass is seen to be covered by serried ranks of cylindrical worm casts. These worm casts vary in height from a quarter of an inch to three inches, and exist in astonishing numbers. It is in many places impossible to press your finger upon the ground without touching one. For scores of square miles they crowd the land, closely packed, upright, and burnt by the sun into rigid rolls of hardened clay. There they stand until the rains break them down into a fine powder, rich in plant food, and lending itself easily to the hoe of the farmer. Having carefully removed the worm casts of the season from two separate square feet of land at a considerable distance from one another, and chosen at random, I find the result to weigh not less than 10¾lb. in a thoroughly dry state. This gives a mean of over 5lb. per square foot. Accepting this as the amount of earth brought to the surface every year by these worms, we get somewhat startling results. I may say, speaking from the result of numerous experiments, that 5lb. is a very moderate yearly estimate of the work done by these busy labourers on each square foot of soil. Even at this moderate estimate, however, of the annual result of their work, we have a total of not less than 62,233 tons of subsoil brought to the surface on each square mile of cultivable land in the Yoruba country every year. This work goes on unceasingly, year after year, and to the untiring labours of its earth-worms this part of West Africa owes the livelihood of its people. Where the worms do not work, the Yoruba knows it is useless to make his farm. The earth-worm which produces such surprising results has been identified as a new species of *Siphonogaster*, a genus hitherto known only in the Nile Valley."

The following food prices prevailing throughout Yoruba will serve to show how industrious are its people and how fertile its soil! They are also a proof, by their extreme lowness, of the complete isolation of the farmers from the expensive and often ill-furnished markets of the coast. Maize, in the grain, was selling in the public market-place at 6d. for a hundredweight, large yams at 3d. a dozen, each of which weighed from five to nine pounds, sweet potatoes at 1½d. a hundredweight, beans at 1s. 6d. a hundredweight, and eggs at from ¾d. to 2d. a dozen, while the more expensive luxuries of beef and mutton were sold for less than 1d. a pound, goats for 2s. 6d. each, sheep for 7s. to 8s., fowls for 3s. a score, and the small cattle of the country for from 30s. to £2 10s. each.

On one occasion, after an unusually profuse supply of food for our mid-day breakfast, I severely reprimanded my cook for wasting, in so lavish a manner, our small supply of money. A piece of mutton, weighing at least four pounds, and no less than five huge dishes of yams, bean bread, agidi (corn-flour starch), and akara (a savoury mixture of beans, salt, red pepper, and other spices, fried in palm oil), seemed to me to be an extravagant meal for two people ; and when, after my interpreter and I had satisfied our hunger, I saw that my cook and servant had invited three of their comrades to assist them in finishing the feast, I was naturally a little put out. The cook himself was somewhat conscience-stricken, and began to count up all that he had spent. After a long process, involving reference to a series of mysterious notches on a piece of wood known as a "tally-stick," he was forced to confess that he had made away with four hundred and fifty cowries, the equivalent of which, on the spot, in English silver would reach the exorbitant sum of fourpence halfpenny! This did not strike me as an excessive charge for a breakfast for seven hungry men. Upon inquiry I learnt that for forty cowries (= $\frac{4}{5}$ of a halfpenny) my men were in the habit of securing a good meal. It has to be remembered that the appetite of an African carrier, walking under a sixty pound load fifteen or twenty miles a day, is not lightly to be reckoned with. I need not tell you that after this extraordinary experience I took steps to learn the exact price of all articles of food and commerce in the country.

When it is considered that the population of Yoruba is variously estimated at from 2,000,000 to 3,000,000, and that it is marked upon the map as one of the areas of dense population, it is easy to imagine how great must be the industry of its people, and how fertile the land under cultivation.

About three miles to the north of the edge of the forest land, from the ridge of a rising in the undulating plain, the first view is had of the great city of Ibadan. Nothing is to my mind more surprising than one's first impression of this "London of Negroland," with its sea of brown roofs stretching on either hand ~~over~~ the rolling country from the two great hills on the west to the lower and more fertile plains on the east, six miles at least from end to end, and more than three in width. Surrounded by its farming villages, 163 in number, Ibadan is estimated to have a population ~~of~~ between 200,000 and 250,000, while within the walls of the city itself at least 120,000 people are gathered. Its houses, built four-square, with all the openings towards a large inner "compound," and a high and blank house-wall of hardened clay abutting on the road, cover an area of nearly sixteen square miles, while the ditch and adobe wall which surround it are said to be more than eighteen miles in circumference. In the winding streets, which intersect its fortress-like houses in every direction, are countless market-booths, perhaps the most remarkable institution of Yoruba, where the passer-by can purchase, for very low rates, the produce of the forests, fields, and looms of the land.

In the same way, by the side of the country roads, are built at irregular intervals, varying from one to six miles, long low sheds near some well, or pool, or running stream, where the farm women sit under the shade of a wild fig tree (*Ficus vogelii*) and sell food to travellers. I have, indeed, seen on several occasions by the roadside a mat with a heap of small bundles of food at one end, the price of which is well known, while at the other end a broken calabash stood ready for the receipt of the current price in cowries. The owner of the mat was doubtless far away at home minding her household matters, while her automatic retailing machine did honest business for her on the road. ~~It is~~ strange that a people, who are apparently as much given to common theft as others, should show such a delicate sense of honour in their adoption and maintenance of this strange means of sale and purchase. Such mats are no doubt under the protection of some especially vindictive fetich, the outward and visible sign of which consists generally of a bit of cleft stick with a ribbon of palm leaf passed through the crack.

In addition to the large city of Ibadan there are many other considerable towns, at distances of a day's journey from one another, throughout Yoruba. Such are Oyo (Awyaw), the capital (40,000 to 60,000), Ogbomoshaw (60,000), Ejibo (22,000), Edé (30,000 to 40,000), Oshogbo (35,000 to 40,000), Iwo (60,000), Ilobu (20,000 to 40,000), Ikirun (30,000 to 40,000), Iseyin (40,000), and Ishaga (70,000). Each of these towns is surrounded by tributary villages, scattered in every direction through the farms, and each chief in the cities owns certain of these villages, over which he exercises feudal rights.

The trails throughout the country are kept in good repair by the farmers and villagers, and stated days are set apart for repairing the fortifications and doing other public work which is necessary for purposes of protection. There is no doubt that the exactions of the chiefs and their warlike followers are a serious oppression to the poor farmers, but they have as their excuse the necessity for devoting all their time to preparation for their frontier wars. Fear of outside enemies and of the overwhelming power of Ibadan, which is the military ~~as well as~~ the commercial centre of the country, prevents any of these cities from throwing off their allegiance to the Alafin of Oyo, who is the rightful king of Yoruba; and with the exception of a few jealousies and quarrels the internal peace of the country may be said to be fairly well maintained.

More directly interesting to manufacturers and merchants at home are the prospects of commercial development which Yoruba holds out. For the natives are not only industrious agriculturists for the purpose of supplying their daily wants in food, but they are also a people whose standard of comfort leads them to spend much labour in raising and preparing luxuries which could be more cheaply supplied to them from Europe.

Backed by the authority of the leading men in the country I was able, by personal inspection, to satisfy myself as to the stock of cloth owned by the people and the quantity annually consumed. I found that, taking an average of rich and poor, an annual consumption of cotton, silk, grass and mixture cloths exists, amounting to no less than thirty yards for each male adult, forty-five yards for each female adult, and six yards for each child. For it has to be remembered that the Yorubas are a fully-clad race, who, for fashion's sake, are ashamed to appear in public unless gracefully draped with two or three ample cloths; and that even the little children in the streets, though often throwing it aside or trailing it after them in the mud, are the proud possessors of a strip of cloth sufficient to cover their little bodies from head to foot. Of the native cloths, or, at least, of some of them, I am able, through the kindness of Sir Alfred Moloney, whose interest in the colony of Lagos is so well and widely known, to show you a good variety, supplemented by my own collection. The price of such goods, expressed in English money, varies from threepence to half-a-crown a yard. They are made of home-grown materials, dyed with native dyes, and woven on narrow looms or frames out of yarn spun by hand.

When I tell you that from careful calculations it appears that no less than 31,000,000 yards of cloth are annually consumed in Yoruba, of which 30,000,000 are of home manufacture, it will be easy to realise the extent to which the people are engaged in the work of making their own garments. I have estimated that not less than 25 per cent of the people are occupied in growing or collecting the materials, in preparing dyes and dying yarn, and in spinning and weaving cloth for the native market. It is for this that one sees the landscape flecked with white fields of cotton while the Yoruba silk, or Sonyun, is gathered in the forests, and the grass fibres are collected and prepared. The richer cloths alone, such as silks, velvets, velveteens, sateens, and damasks, are purchased from the Ijebu middlemen, who dispose of them in small quantities and at exorbitant rates, amounting often to nearly 200 per cent of profit.

Estimating the annual consumption of home-made cloth in Yoruba at 30,000,000 yards, and reckoning the price at not more than 3d. a yard, we have the somewhat startling figure of £375,000 as the value of the yearly output of the native looms. A true average of prices would be nearer 6d. a yard than 3d., but I purposely adopt the lowest estimate in order to be able to form a ready comparison with the average value of English goods at the port of entry. Assuming that European merchants would not be able to supplant more than half of this amount, we have a new market for cotton goods amounting to at least £187,500. To this we must add an equal or greater consumption of tobacco, spirits, hardware, arms, &c., which should, according to the relative proportion of such articles in the port of Lagos, increase the total addition to the imports of the colony by not less than from £400,000 to £500,000.

It may be asked what the Yorubas have to give in return for this large amount of European goods, and how they will be able to transport their bulky produce to the coast? To both of these questions I have satisfactory answers. I have already referred to the fact that the average number of palm oil palms in the richer lands varies—and my estimate is the result of careful counting—from twelve to thirty to the acre. The fruit of these trees is in the main allowed to lie and rot upon the ground, but enough is gathered to supply the local wants at a very cheap rate. At Ibadan, which is not more than five days' journey by road from the coast, I purchased palm oil at 2s. 6d.

for an eleven-gallon measure, or for £3 15s. a ton, as compared with from £17 10s. to £23 a ton in Lagos. Palm kernels were sold to me for 1s. 6d. a measure as against 5s. in Lagos; or in other words, a ton of kernels was worth £3 at Ibadan, where, I am bound to say, there is little or no demand, and a consequently short and dear supply, as compared with £10 a ton in Lagos. These prices were "white man's prices," and there is no doubt that the enterprising native can, by dint of bargaining, procure them at a lower rate. Estimating the number of square miles upon which the oil palm grows at 4,000, and accepting the low estimate of five to the acre, we have, in round numbers, 13,000,000 as the number of trees available for cropping. I have calculated that the area at present supplying the Lagos market with palm produce does not exceed 3,600 square miles, and that the number of palm trees upon this area does not exceed 11,500,000. My estimates are, of course, very rough, and are formed for purposes of comparison, but they may be accepted as moderate and in the main reliable. The trees from which Lagos draws its supplies suffice for a yearly output of over 3,000,000 gallons, of the export value of over £213,000, and of palm kernels amounting to more than 34,000 tons, of the value of about £260,000, or in other words, their produce is valued at Lagos at not less than £473,000. I purposely quote some of the lowest values of recent years. One is therefore not exaggerating when one counts upon a supply from the Yoruba palm fields of not less than £400,000 worth of palm produce every year. I have calculated that the Yoruba farmer who had the enterprise to carry a pot of oil or a load of kernels to the coast would realise the handsome competence of from 5d. to 7d. a day, as compared with his present earnings of less than 2d. It is unreasonable to suppose that such a dream of wealth would fail to tempt so eager a trader as he is by nature to forsake his weary loom and his infinitesimal earnings, and to embark upon the waters of commercial speculation, which prove so attractive to even the sterner spirits of commercial England. For it is not alone upon the produce of his palm fields that he relies. His cotton, which is at this moment, even at the present low rates, commanding a price equal to Indian cotton, is ready to his hand in immense quantities, and with care and the introduction of better seed would rapidly obtain a permanent place in the European markets. It is, indeed, hoped that recent experiments which have been carried out by the Botanic Station at Lagos will shortly place the natives in possession of a superior fibre, and one more suited to his soil than the cotton at present available in Yoruba. And not only would the trade in cotton be an important feature in our commercial relationship with the country, but shea butter, ground nuts, benni seed, native indigo, camwood, indiarubber, gums, fibres, and ivory, would be transported to the coast for local sale or shipment. The trade in foodstuffs alone would be a source of wealth to the interior and an advantage to the coast towns, for in Lagos maize is often sold at 10s. a hundredweight in times of scarcity, and other necessaries of life fetch equally high prices.

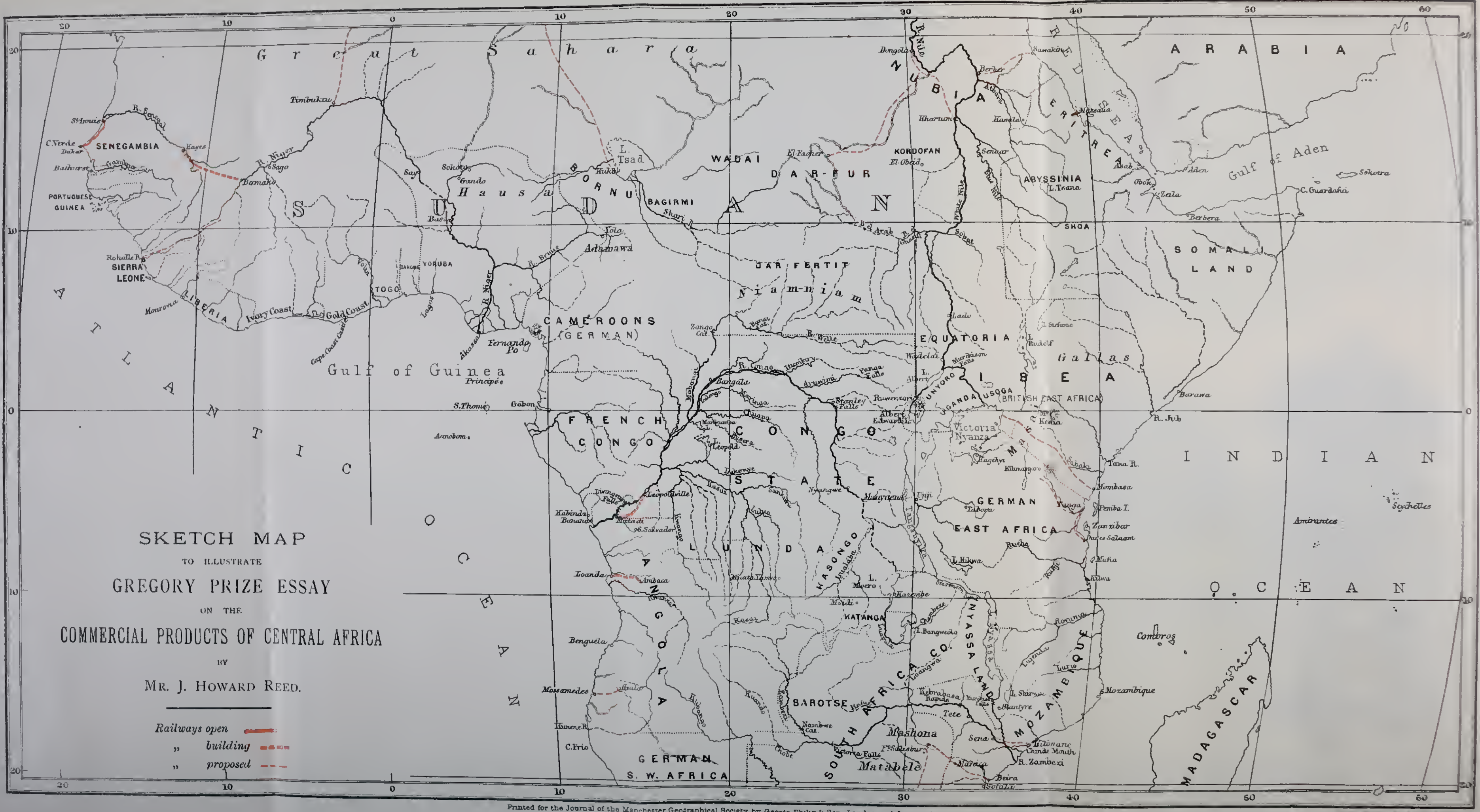
When I mention that from May, 1888, when the Botanic Station of Lagos made its first beginning, until the end of last year, no fewer than 80,000 young plants of economic value had been distributed among the natives, of which more than 60,000 had been purchased, and that, in addition to these seedlings, large quantities of seed of cotton and other valuable plants had been distributed or sold, it will be sufficiently clear that there is no lack of anxiety among the Yorubas to improve their crops and to adopt new economic cultures. It is quite to be hoped for that within a few years Yoruba cotton, which last year fetched over 6d. per lb., and is now quoted at $4\frac{1}{2}$d. to $4\frac{11}{16}$d., as compared with Indian at $4\frac{1}{4}$d. to $4\frac{3}{8}$d., Egyptian at $6\frac{1}{4}$d. to $6\frac{1}{2}$d., and Louisiana at $4\frac{7}{8}$d. to 5d., should, by the introduction of finer qualities and a better system of cleaning and packing, become a regular and welcome feature in the English market. As an example of what can be done by energetic exploiting of the resources of the country, I may mention the recent introduction to the English market, by Sir Alfred Moloney and the authorities of the Royal Gardens at Kew, of the African piassava, a product of the commonest tree of the coast-line, which can be supplied in unlimited quantities, and is at present commanding no less a price than £70 a ton. The development of the india-rubber trade on the Gold Coast is to be credited to the same origin, as is also the trade in ogea gum from Lagos, which is now sold at £34 a ton.

I have shown enough to prove that in Yoruba we have an immediate market for half a million a year of European goods, and that in return for these goods the people have the necessary amount of produce and the will to put at least an equal value of trade into our hands. By opening up the rivers which are of navigable depth from the coast to the heart of the country, there is no doubt that this trade could be at least doubled. These natural waterways are unfortunately as completely choked by vegetation as the overland trade routes are blocked by a rank growth of middlemen. The advantages to the colony of Lagos of an additional million of trade would be considerable, but to the industrious and struggling Yorubas an opening for their energies in the direction of commerce would be invaluable. I may say that the Government has for some time been actively engaged in negotiating the opening of the trade routes to the interior by land and water without infringing upon the liberties of the tribes, who are much better left to manage their own affairs, and without using unwise or arbitrary measures.

Could the Ijebus and other tribes be persuaded "for a consideration" to relinquish their commercial blockade, which may or may not be quite within their legal rights, there is no doubt that they would be the first to profit by the access of prosperity which would follow. The Yorubas would profit in no less a degree; their warlike young men would find in trading an adventurous life well suited to their training, which at present unfits them for more peaceful employment; a less limited supply of arms would restore the balance of power in the interior and insure the safety of the coast; while the terrors of the slave-trade would give way to a large extent to the more profitable occupation of commercial enterprise. For the African is by nature as much addicted to bargaining, bartering, and trading in all its aspects as a Spaniard or a Chinaman is given up to gambling, and it is not to be doubted for a moment that they would eagerly grasp at so favourable an opportunity of indulging their most enthralling passion.

LANE BY UPPER IRWELL.

(In Illustration of Geography in Newspapers, &c. See page 124.)



SKETCH MAP

TO ILLUSTRATE

GREGORY PRIZE ESSAY

ON THE

COMMERCIAL PRODUCTS OF CENTRAL AFRICA

BY

MR. J. HOWARD REED.

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The Theodore Gregory Prize Essay.

THE COMMERCIAL PRODUCTS OF CENTRAL AFRICA,

(THE COUNTRY LYING BETWEEN THE SAHARA AND THE ZAMBEZI),

AND THE BEST METHOD OF DEVELOPING A TRADE IN THEM WITH EUROPE.—(*See Map.*)

By Mr. J. HOWARD REED, Manchester.

PART I.

IN describing the "Commercial Products of Central Africa" in this essay, it will, perhaps, be more satisfactory to split up the country under consideration, roughly, into districts—without necessarily observing exact political divisions—and deal with the products of each district in turn. This arrangement, although it may involve more or less repetition, will have the advantage of rendering the essay more useful for purposes of reference. Following, therefore, this plan, and commencing at the north, we come first to

KORDOFAN AND DARFUR.

These districts, which formed part of the Egyptian Sudân, appear to be almost identical in point of natural productions. Although so far removed from the coast on all sides, there is a considerable trade carried on principally, or almost entirely, by means of the cumbersome and primitive camel caravan. A large portion of the country is merely sandy desert, and in its present condition produces little or nothing. In various parts of the Sahara artificial oases have been formed, by means of artesian wells sunk through the sand. Possibly the same plan might be successfully adopted, where necessary, in this portion of the Sudân. Cardinal Lavigerie says: "There is plenty of water in the Sahara. The wells have been left to choke up, and the oases to fall out of cultivation, but . . . there is water everywhere. Once bring it to the surface, and life will reappear where we have known nothing but sterility."* Numerous natural oases at present exist; in their neighbourhood the soil is very fertile, and Indian corn, rice, barley, millet, wheat, sesame and other grain is successfully produced. The high-lands and mountain sides of Darfur are said to be well cultivated, and here, in addition to the cereals before named, cotton thrives, and is largely grown. The gum-arabic of commerce is exported, as well as honey, dates, and other fruits.

Camels do not seem to thrive as well here as further to the north, but a species of humped oxen is largely used in their stead. Horses, goats, and sheep appear to thrive well. The elephant is found on the southern borders, and ivory, consequently, forms a large item in the trade of the district. Antelopes of various kinds, and ostriches, are found in great numbers. The country is well suited for ostrich farming, and, although this industry is not at present carried on, a considerable trade is done in ostrich feathers.

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* Interview with Cardinal Lavigerie, *Anti-Slavery Reporter*, May and June, 1891, page 106.

Among the minerals gold-dust is found, but only in small quantities. There are copper mines in Darfur, but, so far as is at present known, they are not of great importance.

There is a good market here for various kinds of English and American goods, and especially for Manchester cloth. The natives, however, already manufacture a considerable quantity of cotton goods themselves, and, as the native-made cloth is of a very strong and durable character, it is necessary that the Manchester cloth sent to the district, to be acceptable and able to compete with that of native manufacture, should be of strong and good quality.

KASALA AND SENAAR.

To the east of Kordofan, on the eastern side of the Nile, are situated Kasala and Senaar, both of which formed portions of the Egyptian Sudân, and through which flow the great Abyssinian tributaries of the Nile, viz., the River Atbara and the Blue Nile. A great portion of these districts is of a fertile and productive character. Sir Samuel Baker states * that cotton of a very superior quality is indigenous to the soil, and he reminds us that the cotton now cultivated in Egypt was introduced from the Sudân during the present century. If means of "barrage" were adopted to store up water in the Atbara River, which runs dry during the dry season in Abyssinia, Sir Samuel says that no less than 30 million acres of land might be brought under cultivation for growing cotton, producing sufficient to supply Lancashire with the quality most in demand. He further points out that the harvest season is so certain that "neither rain nor dew disturbs the dryness of the atmosphere, and the freshly-gathered cotton requires no covering." This fact would, of course, assist cheap production.

Most cereals, tobacco, and many fruits, such as oranges, lemons, limes, pomegranates, peaches, and grapes, flourish in this neighbourhood. Salt is largely produced on the Red Sea coast; and, like Kordofan, this country exports ivory, gold-dust, and ostrich feathers.

ABYSSINIA.

To the south is Abyssinia, which, owing to its variety of elevation, varying from 3,000 to 14,000 feet above the sea, has a climate ranging from that of tropical India to that of mild Europe. The products of this country are as various as those of the countries whose climates are represented. In the valleys and low-lying country, where the climate is tropical, cotton, coffee, sugar-cane, tobacco, indigo, gums, maize, millet, rice, and flax thrive well; with tropical fruits such as bananas, dates, pomegranates, lemons, and limes. At higher elevations are to be found European cereals and fruits of all kinds—wheat, barley, and other grain, with oranges, grapes, peaches, &c.

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* Letter to the *Times*. See weekly edition, June 4th, 1890. Page 8.

Abyssinia also affords luxuriant pasturage for cattle, sheep, goats, horses, and asses, and is highly suited for cattle rearing. Large quantities of honey are produced, and among the exports are to be found ivory, gold, musk, gums, various drugs, hides, &c. This country has been described as one huge garden, and if properly developed might supply the markets of the world with coffee and cotton. The people have commercial instincts, and seem anxious to trade. Communications, however, are bad, or almost entirely absent, and the country is much disturbed by inter-tribal wars.

SOMALI-LAND.

This part of Africa is very little known at present. It is a very difficult country for the European to penetrate, owing to the extortionate demands for tribute or black-mail which are made by the chiefs of the numerous small tribes or clans into which the population is split up, each one of whom demands his full "pound of flesh," so that the traveller's stock of trade goods is soon exhausted. The people are, moreover, of a treacherous character, and several travellers have paid dearly, by losing their lives, for their temerity in proceeding any distance into the interior.

So far as is known, a considerable portion of the country is of fertile character, and produces coffee in considerable quantities, as well as a sufficient amount of grain to supply the inhabitants with abundant food. Salt is obtained from salt lakes in the interior, and bricks or cakes of this are largely used as the currency of the country, and find their way into Abyssinia for the same purpose. Aromatic gums, frankincense, and myrrh are exported. Ostriches abound in the country, and their feathers form a considerable item of trade. It is probable that ostrich farming would be successful if adopted.

BRITISH EAST AFRICA, OR IBEA.

The territory recently taken in hand by the Imperial British East Africa Company, which covers a very wide area (some 750,000 square miles), embraces within its bounds many productive districts, which are probably destined to play a very important part in the future commercial development of Central Africa. The coast line of the Company's sphere of influence extends from the mouth of the Umbe River on the south to the Jub River on the north—an unbroken sea-line of some 400 miles. The interior territory, over which the Company now holds sway, extends to the Congo State on the west and to the borders of Abyssinia and the Egyptian Sudân on the north. It includes within itself the whole of Equatoria,* the rich district of the Semliki Valley, situated between the Albert and Albert Edward Nyanzas, the countries of Ankori, Uganda, Usoga, Gala-land, Masai-land, and other smaller states.

The products of this great territory are many and varied, and the possibilities of future trade almost immeasurable. Gold has been observed by the late Mr. Mackay in the neighbourhood of Lake

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* A lengthy translated quotation from a valuable report on the products of Equatoria, sent by Emin Pasha to the *Esploratore*, is to be found in Major Casati's work, "Ten Years in Equatoria," Vol. I., pages 258 to 270. It deals very fully with the excellence and quantity of the various animal and vegetable products of the province.—J. H. R.

Victoria; Emin Pasha has reported the same thing at the Albert Nyanza; and Captain Lugard reports to the Company that during his recent work on the Sabaki River he discovered what he believes to be gold-bearing quartz. Copper has, also, recently been found by that gentleman in the same neighbourhood.* Iron is abundant throughout the whole country, and is almost everywhere worked by the natives. In some districts the ores are especially rich. Speaking of Uganda, Mackay says: "Every stone is iron." Plumbago has been discovered between the coast and Lake Victoria. Uganda has large deposits of kaolin (a rich porcelain clay), which Mackay says † "will prove of great value when the country becomes open to trade." Nitrate of soda is found in Masai-land, and may prove of commercial importance.

The present most valuable item of trade is, doubtless, ivory. Large quantities of a superior quality, worth 10s. or more per lb. in Liverpool, are obtained at a cost of about one shilling per lb.‡ in Masai-land, in Usoga, and the districts to the north, as well as from Uganda and Unyoro.

The cattle districts are of course rich in hides, horns, bones, and other animal products. The first-named is likely to prove a very valuable article of trade. The natives at the present time set no value upon the hides, and will sell them for next to nothing. Mr. H. H. Johnston has stated that this trade alone would go a long way to pay for railway construction.§ The great cattle districts are: The Gala country, which is stated to possess enormous herds which outnumber the inhabitants about seven or eight to one; Masai-land, where ten shillings-worth of trade goods will purchase an ox‖; the districts bordering the banks of the Upper Nile; the plateau lands to the west of the Albert Lake, Uganda &c. These countries—more especially Masai-land and the Gala country, which are nearer the sea, and can therefore be more easily opened to European trade—are eminently suited for stock breeding, and may in the future rival even Australia and America. Masai-land is noted for an abundance of splendid sheep of the fat-tailed variety, goats, useful asses, and fowls noted for their abundant production of eggs. In Masai-land the tsetse-fly is unknown. Among many other more or less valuable animal products may be named ostrich feathers, hippopotamus hides and ivory, wild beast skins, giraffe bones, crocodile leather, rhinoceros horns, monkey skins, honey, beeswax, and living wild animals and birds.

Turning to the vegetable kingdom, we find the products of this district both rich and various. Coffee, cotton, and tobacco are indigenous over a great part of the Company's territory, and could be cultivated to almost any extent. Indiarubber is found in the forests and jungles between the Victoria Nyanza and the coast, and specimens of this, which the Company have had sent to England, have "been most favourably reported upon." Steps are now being taken to collect this, and the Company believe it "cannot fail to form an important industry in the immediate future."[*] Valuable timber trees exist in Masai-land, and in the neighbourhood of the rivers could doubtless be cheaply conveyed to the sea; in any case they will be of great value in the country itself, as commerce advances and civilisation extends. Orchilla-weed, from which valuable dyes and litmus are made, is abundant. Sugar cane is plentiful, but probably this could not be cultivated to compete with the West Indies, it would, however, supply local demands. Bananas, sweet potatoes, Indian corn, and millet are indigenous throughout nearly the whole territory. Rice, arrowroot, and various kinds of peas and beans are found in several districts. On the high-lands European fruits and vegetables will thrive well. Mr. H. H. Johnston, when living on Mount Kilimanjaro, planted potatoes, onions, mustard, cress, radishes, turnips, carrots, peas, beans, spinach, borage, sage, tomatoes, cucumbers, and melons, all of which, he says, flourished "amazingly." He also planted wheat, coffee, limes, oranges, and cocoa-nuts.[†]

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* See Imperial British East Africa Company's Report, July 17th, 1890.

† See "Mackay of Uganda," p. 107.

‡ See paper on "The Commercial Prospects of Tropical Africa," by Mr. H. H. Johnston, C.B., in the *Journal of the Manchester Geographical Society*, vol. i.

§ *Ibid.*

‖ See paper on "British Interests in Eastern Equatorial Africa," by Mr. H. H. Johnston, C.B., in the *Journal of the Manchester Geographical Society*, vol. i.

Mr. Stanley speaks in glowing terms of the wonderful productiveness of the Semliki Valley and the countries on the west of Lake Victoria. Mackay says of Uganda: "The country is really a rich one and might produce anything. . . . . I should fancy this would be excellent land for growing tea and quinine, and many other valuable articles."[‡] Messrs. H. H. Johnston and Joseph Thomson speak in equally high terms of Masai-land. Later travellers confirm their reports, and speak similarly of other districts to the north, notably the district of Usoga.

ZANZIBAR, &c.

In the islands of Zanzibar, Pemba, and Mafia—the two former of which are now under British protection—the staple productions are various spices, such as cinnamon, nutmegs, mace, pepper, and cloves, the latter of which are exported in enormous quantities. Abundance of all kinds of tropical fruits, cocoa-nuts and dates, besides rice, millet, beans, sugar-cane, melons, pumpkins, &c., are also largely produced.

The exports include, besides those mentioned above, ivory, hides, gum-copal, monkey-skins, timber, dyewoods, indiarubber, &c., most of which, of course, find their way into the Zanzibar market from the main land.

GERMAN EAST AFRICA.

The district on the East Coast over which the Germans hold sway is, to a considerable extent, similar to that portion of Africa included in the British sphere, and previously described.

In the northern districts cattle are plentiful, and the German traders will doubtless be able to develop a considerable trade in such animal products, as hides, horns, bones, &c. In portions of the central districts of Ugogo and Unyanyembe domestic animals—oxen, horses, sheep, &c.—cannot thrive owing to the presence of the tsetse-fly. This scourge does not affect wild animals, with which certain parts of the country abound

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[*] Imperial British East Africa Company's report, July 17, 1890.

[†] See paper on "British Interests in Eastern Equatorial Africa," in the *Journal of the Manchester Geographical Society*, vol. i.

[‡] See "Mackay of Uganda," page 108.

Between the lakes, Victoria, Tanganyika, and Nyasa, grow large quantities of both wheat and rice. Mr. Stanley says that in Unyanyembe 50,000 bushels of the former or 100,000 bushels of the latter can be bought at any time.* More than 30 years ago Captain Speke wrote: "Rice . . . I consider capable of being produced in great quantities and of very superior quality."† No doubt vast quantities of these two, and several other, grains could be grown with little difficulty. Stanley tells us that the same country will grow coffee equally well, and Speke says this is also the case with sugar-cane and tobacco. Cotton grows wild in the neighbourhood of the Victoria Lake, and both Speke and Mackay refer to this fact. Speaking of Kagehyi, at the south end of Lake Victoria, Mackay says:‡ "Cotton . . . . grows here plentifully in the wild state, while even a little is cultivated by the natives to make strings for their beads."

The districts near the coast produce spices similar to those of Zanzibar, and pepper, nutmegs, mace, cloves, &c., can be grown in unlimited quantities. Tea has been experimentally cultivated, apparently with much success. Coffee, cocoa, sugar-cane, tobacco, all kinds of European and native fruits and vegetables, and sesame, a seed from which a useful lamp oil is expressed, are also largely produced.

A large trade is already done in gum-copal, which is either picked off the trunks of the gum-trees as it exudes, or is dug out of the earth at the foot of the trees. Iron is more or less abundant throughout the country, salt is found in places, and nitrate of soda has been observed in some districts. The bulk of the German territory is undoubtedly rich, and offers a highly satisfactory field for development.

MOZAMBIQUE, ETC.

That portion of the east coast, belonging to the Portuguese, and known as Mozambique, as well as the "Hinterland" of the same, right away to the Nyasa Lake, is to a large extent similar in its productions to the territory in the German sphere of influence further to the north. Although this district has been occupied by the Portuguese for centuries, they have hitherto done little to develop it.

A considerable quantity of ivory here finds its way to the coast, but it is mostly conveyed from the far interior, few elephants being now found between the coast and Lake Nyasa. The district abounds in animal life, and gives prospect of considerable trade in skins, hides, horns, bones, and similar animal products. Among the wild animals found are the lion, leopard, hyena, two-horned rhinoceros, gnu, antelope, buffalo, zebra, and quagga. The porcupine and many other small animals are abundant. The principal domestic animals are goats, which are found everywhere in the district, and oxen, which, although not kept generally by the natives, are plentiful in many places.

The most common mineral is iron, which is abundantly found, and is everywhere worked by the native smiths. Coal has been reported to exist in the neighbourhood of the Rovuma River, but it is still questionable whether it is of much value. Gold has been found in small quantities in some of the rivers. Such stones and crystals as garnets (as yet of small value), almandine, tourmaline, and beryl, have been discovered,* and this may be evidence of rich deposits of precious stones which will in the future be unearthed. A clay suitable for pottery is also found.

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* Mr. H. M. Stanley's speech in Dundee, June 14, 1890.

† *Blackwood's Magazine*, 1859.

‡ See "Mackay of Uganda," page 71.

The country abounds in rich districts, where the soil is fertile to a degree. Various spices, similar to those of Zanzibar, flourish. Fruits, such as the lime, lemon, guava, &c., are found. Sorghum, maize, rice, sesame, cassava, beans, yams, &c., grow in abundance. Cotton is indigenous, while the tobacco plant, sugar-cane, and cashew-tree all flourish. A considerable trade has already been done in india-rubber, orchilla-weed, and calumba-root, and the exportation of all these commodities is capable of great expansion. Gum-copal also forms one of the principal exports. Many parts of the country are well suited for the residence of Europeans.

NYASALAND, NORTHERN ZAMBEZIA, AND KATANGA.

These districts occupy one of the most flourishing portions of Central Africa. In the neighbourhood of Lake Nyasa the African Lakes Company, which has for some years carried on a work both philanthropic and commercial, has abundantly proved what can be done in the heart of the "Dark Continent" by European enterprise and spirit.

Gold has been found in small quantities in the rivers in the neighbourhood of the Nyasa,† and is known to exist in the district of Katanga. When we remember that there is a rich gold-bearing district on the south side of the Zambezi, it suggests that, probably, such may also prove to be the case in the countries to the north of the river when they become better known, especially when we remember, too, that promising quartz-reefs are in the neighbourhood. Copper is known to exist in large quantities in Katanga, and has been rudely worked there by the natives for ages. The trade in this metal is sure to become a valuable one in the future. The natives have already done a large trade in copper, which, in the shape of bars and ingots, is constantly passing as currency among the peoples of that part of Africa. Iron is found more or less throughout the country. A large part of this portion of Africa is rich in animal products, it being one of the best hunting grounds of the continent. Ivory is plentiful, large numbers of elephants ranging the district. Vast herds of buffaloes, various kinds of antelope, zebras, gnus, giraffes, rhinoceros, &c., are found. The rivers are inhabited by hippopotami and crocodiles. Herds of cattle and flocks of sheep are kept by the peoples on the high-lands near Lake Nyasa and the Shiré River. Goats are plentiful everywhere. The hides, skins, bones, horns, &c., of these animals, with honey and beeswax, promise a rich export trade for the future. The African Lakes Company have introduced the Angora goat, and, by its means, hope to establish a trade in mohair.‡ The vegetable products are varied and numerous. Cotton is indigenous, and is manufactured in a rude manner by the natives. Indiarubber is plentiful, and a considerable trade in this, as well as in various oil seeds, is already carried on on the Lower Zambezi and Shiré River. Sugar, coffee, wheat, potatoes, and other European vegetables are grown by the Company in Nyasaland, who are also experimenting, with considerable promise of success, with tea, a special variety of cotton, and some medicinal plants.* The general native grains, vegetables, and fruits of Central Africa are found in abundance throughout the district, and most European fruits would, doubtless, thrive well. The country through which the Upper Shiré River passes is, according to Consul H. H. Johnston, "magnificently fertile."†

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* See paper by Rev. Chauncy Maples (Archdeacon Maples), in the *Journal of the Manchester Geographical Society*, vol. i.

† See "Notes on the Nyasa Region," by Consul O'Neill, in the *Journal of the Manchester Geographical Society*, vol. iv.

‡ *Ibid.*

ANGOLA.

The Portuguese possession of Angola, which extends from the Congo on the north to the Kunene River on the south, with the "back country," is a valuable and productive portion of Central Africa, and has a fairly healthy and agreeable climate. There is prospect of gold being found in parts of the country, as quartz-reefs are known to exist. Coal and copper have been reported, and these may in the future prove of commercial value. Iron is also found. The usual animal products consist of ivory, hides, horns, bones, honey, wax, &c.

The great riches of the Angola territory, however, consist in an abundance of indiarubber, coffee, vegetable-oil, palm-kernels, sugar, orchilla-weed, cotton, baobab-fibre, and tobacco. The soil is abundantly productive, and produces, largely, various cereals and fruits, such as corn, maize, manioc, millet, pumpkins, sweet potatoes, yams, bananas, oranges, limes, lemons, pine-apples, &c. The exports for 1887 from this colony are stated by Mr. Joseph Rippon‡ to have been of the value of no less than £250,000. A railway already exists, or is at any rate in a forward state, reaching from Loanda, on the coast, to about 200 miles eastward into the interior, as far as Ambaca. This railway taps the rubber district and the coffee plantations, and has already largely reduced the cost of carriage to the coast.

INDEPENDENT CONGO STATE.

The vast territory over which the King of the Belgians now holds sway, known as the Congo State, has an area of nearly nine hundred thousand (900,000) square miles. It extends from the western coast of Lake Tanganyika to the mouth of the Congo on the Atlantic coast; and from about the fourth parallel of north latitude to the sources of the Congo in the neighbourhood of lakes Bangweolo and Moero; or in other words to about the twelfth parallel, south latitude, thus embracing nearly the whole of the vast Congo basin, and more or less extending north and south through 16 degrees of latitude, and east and west through no less than 18 degrees of longitude.

This vast country is inhabited by an estimated population, according to Mr. Stanley, of some forty millions§ of people of varying race and type. Among them may be found the pure negro of the West Coast, the high-type pastoral Wahuma of the high-lands, the Manyuema cannibal of the Upper Congo, and the Akka dwarf of the Aruwimi forest.

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* See "Notes on the Nyasa Region," by Consul O'Neill, in the *Journal of the Manchester Geographical Society*, vol. iv.

† See paper read before the Royal Geographical Society, Nov. 11th, 1890.

‡ See paper on "The Portuguese Possessions of the South-west Coast of Africa, and particularly of Angola," in the *Journal of the Manchester Geographical Society*, vol. v.

§ Mr. Ravenstein believes these figures to be much too high, and considers fourteen millions to be nearer the mark.—J. H. R.

As various as the types of people are the climatic conditions of different parts of the enormous territory. Here, low-lying lands, watered by incessant rains, overgrown with rank vegetation, and reeking with insidious malaria; there, healthy and bracing high-lands, where the ground oft-times sparkles with hoar-frost in the early morning, in spite of its tropical situation, which may be, perhaps, on the very equator itself. Thousands of square miles of rolling and park-like grass-land, fertile to a degree, and where man and beast alike find plenty; thousands of square miles, again, of dark and gloomy forest, containing millions of enormous forest-giants, and countless myriads of smaller trees, the whole bound together and interlaced above, by such a perfect network of climbing plants and creepers, that the light of the sun can find no entrance, and choked below by a dense, impassable, and almost solid undergrowth. The enormous stretch of territory is traversed by the great Congo River and its many tributaries, which, collectively, afford between seven and eight thousand miles of navigable water.

The products of the Congo State are both varied and rich. Gold, copper, lead, plumbago, and iron are each known to exist, but, so far, none but the last-named have been found in any great quantity. It is probable, however, that rich deposits of the more valuable metals may be found as the country becomes better known. Copper is already smelted by the natives in some places, and that portion of the State territory near the Katanga country will most likely be found to yield rich deposits of the same metal. Katanga itself is about to be annexed to the Congo State,* and Captain Stairs, of Emin Pasha renown, has now this work in hand.

The animal products are both rich and many. Ivory, as elsewhere in tropical Africa, forms the principal article of commerce, but an extensive trade is also already done, and is capable of great extension, in various other animal commodities. Wild animals roam, more or less, over the whole of the territory, the principal among them being elephants, lions, buffaloes, zebras, giraffes, and antelopes of many kinds. The rivers abound in crocodiles and hippopotami, while vast numbers of plumage birds of all kinds exist. As suggested by Mr. H. H. Johnston, with reference to the east-coast, a large trade might be done in living wild animals and birds. Among the domestic animals are found sheep, goats, pigs, and fowls, and these, together with the wild animals above mentioned, contribute an extensive supply, which can be increased indefinitely, of hides, furs, horns, teeth, bones, feathers, &c., to which may be added porcupine quills, tortoiseshell, honey, and beeswax.

The greatest present riches of the State, however, doubtless consists in the unlimited supply of its vegetable commodities. In the great Aruwimi and Congo forests, innumerable timber trees of various and valuable kinds exist, and no doubt vast numbers of these can be successfully and cheaply rafted to the coast. Among them are to be found mahogany, lignum-vitæ, ebony, teak, redwood, &c. Indiarubber, palm-kernels, palm-oil, various gums, orchilla-weed, copra, camwood, rattan-canes, palm-fibre, ground-nuts, kola-nuts, myrrh, frankincense, benniseed, gum-copal, red-powder, bark and fibre of the baobab-tree, &c., are obtainable, in most cases, in unlimited quantities. More or less throughout the State the soil is highly productive, and will produce, to an indefinite extent, rice, sugar, cotton, tobacco, hemp, yams, sweet potatoes, maize, cassava, millet, sesame, wheat, and coffee. A large export trade is already done in many of these products. Tropical fruits, such as bananas, plantains, pine-apples, grapes, oranges, limes, pumpkins, melons, tomatoes, &c., thrive well, and most of them can be produced to an incalculable extent.

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* Since this essay was written Katanga has been annexed, and Belgian stations have been established in the country.—J. H. R.

FRENCH CONGO AND CAMEROONS.

The exportable products of these two districts are very similar to those of the Congo State. Ivory is exported from both districts, that from the Cameroons being plentiful, and that from the neighbourhood of the Gabon River of especially fine quality. The usual animal products, viz., hides, furs, horns, teeth, various skins, &c., are also forthcoming. The vegetable products consist of palm-kernels, palm-oil, india-rubber, cocoa-nuts, dye-wood, ebony, ground-nuts, yams, sweet potatoes, manioc, maize, millet, cocoa, coffee, pepper, capsicum, sugar, tobacco, &c., with such fruits as bananas, pine-apples, papaws, oranges, limes, and many others.

NIGER TERRITORY, YORUBA, AND THE GOLD AND IVORY COASTS.

The whole of these districts are rich and productive. Gold-dust is exported in considerable quantities from the Gold Coast and Ashantee; while silver, tin, copper, and manganese are also found, and find their way to the coast trader. Ivory, hides, horns, wax, &c., form a valuable portion of the exports. The staple trade, however, for the whole district, is palm-oil. Enormous quantities of this commodity are collected all through the country, and brought to the coast for shipment to Europe. Cotton grows well in the district—it is, in fact, indigenous—and is largely cultivated by the people of Yoruba. It is not at present exported very extensively, but is largely used for native manufacture. Experiments are being made in growing cotton of a superior kind, from special seed imported from Egypt and elsewhere,* and this appears to give marked promise of success.

The people of the Yoruba district are well clothed in cotton goods, almost entirely of native manufacture. There is, therefore, a good field here for Manchester merchants and manufacturers. To be successful, however, they must import an article which will not only be cheaper than that of native make, but be also of more suitable and durable character. If an import trade of this kind can be established, a large number of the natives, who are now cotton weavers, would be set free to become cotton growers, and thus help to supply the British market with the raw material.†

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* See address delivered before the Liverpool Chamber of Commerce, by Mr. Alvan Millson, M.A., Assistant Colonial Secretary for the Colony of Lagos, on February 5th, 1891, reported in the *Manchester Guardian* of the following day.

† See paper on "Cotton Interests, Foreign and Native, in Yoruba, and generally in West Africa," by His Excellency Governor Moloney, C.M.G., of Lagos, in the *Journal of the Manchester Geographical Society*, vol. v.

In this rich and fertile district the usual vegetable products and fruits of Central Africa are grown in abundance. They consist principally of palm-kernels, indiarubber, copra, dyewood, barwood, African rosewood, various timbers, fibres, anotta, gums, maize, yams, ground-nuts, sugar, indigo, spices, pepper, benniseed, cocoa-nuts, kolo-nuts, cocoa, coffee, tobacco, lemons, pine-apples, melons, limes, and guavas.

LIBERIA.

In this small Free State the exports are many and various. Here animal life is abundant, and the usual animal productions are consequently forthcoming. Elephants, leopards, hippopotami, crocodiles, porcupines, wild hogs, several kinds of deer, and apes. besides other less important wild animals, are found. While among the domestic animals may be mentioned bullocks, sheep (covered with hair), goats, swine, geese, turkeys, ducks, chickens, &c. It has been stated that, perhaps, in no part of the world can chickens be raised more cheaply, nor in greater numbers, than in Liberia.*

The vegetable products, also, are as numerous and varied as can be found in any part of Africa. Valuable timber trees, such as rosewood, mulberry, mahogany, oak, saffron, hickory, poplar, &c., are found, besides an abundance of such commodities as camwood, indigo, palm-oil, gum, frankincense, indiarubber, cotton, sugar, cocoa, ground-nuts, ginger, pepper, and other spices. Coffee, stated to be equal to that of Mocha or Java, is cultivated, arrowroot is abundant, and many kinds of medicinal plants abound. All kinds of grains, roots, and other cereals thrive well, while rice is largely cultivated and requires very little attention. Sweet-potatoes, cassava, yams, tania, beans, peas, cabbages, tomatoes, cucumbers, water-melons, pumpkins, musk-melons, beets, radishes, carrots, and other vegetables can be grown in abundance. All kinds of tropical and sub-tropical fruits grow in plenty, and many of them are indigenous. Among them may be found the orange, lemon, lime, pine-apple, guava, mango, plantain, cocoa-nut, tamarind, pomegranate, cherry, peach, rose-apple, and banana.

SIERRA LEONE AND GAMBIA.

From Sierra Leone and the Gambia district the animal exports consist, principally, of ivory, skins, hides, beeswax, honey, and ostrich feathers. While the vegetable products exported are, principally, palm-oil, palm-kernels, indiarubber, cotton, fibre, gum-copal, kolo-nuts, cocoa-nuts, ground-nuts, oil-seeds, benniseed, camwood, maize, sesame, wheat, rice, millet, &c. Most of the fruits and vegetables cultivated in Liberia would, no doubt, also thrive well. Gold, silver, and mercury are each found in small quantities, and iron is fairly abundant.

CENTRAL SUDÂN AND LAKE TSAD.

In the Central Sudân, and the neighbourhood of Lake Tsad, the products consist of much the same as those of the districts last referred to. The inhabitants of this part of Africa have reached a considerably advanced state of civilisation. The people are industrious, trade keenly among themselves, and are, moreover, good craftsmen, and follow various trades.

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* See paper on "Liberia," by the Hon. E. B. Gudgeon, K.C.A.R., K.C.S.O., Consul General for Liberia, in the *Journal of the Manchester Geographical Society*, vol. iv.

Domestic animals, such as horses, asses, cattle, goats, and sheep are common among the people, while elephants, lions, hippopotami, rhinoceros, and other wild animals are found in certain districts.

The soil is productive and rich, and the natural vegetation is similar to that just described as common to Liberia and the Gambia district. All kinds of grain, besides ground-nuts, figs, pomegranates, citrons, and other fruits, are cultivated. This partially-civilised district, which is densely populated, is not yet properly in touch with European markets, but when trade routes to the country are opened a rich commercial field will be tapped.

PART II.

From the foregoing it will be seen that the "Commercial Products of Central Africa" are nothing less than prodigious. It is difficult, however, to say which is "the *best* method of developing a trade in them with Europe." There seems to be no *one* method by which this can be accomplished. The question may be looked at from the point of view of the individual trader, from that of a large trading-house, and again from that of a great chartered company. I propose, therefore, to consider briefly, and in a general manner, the possibilities of trade; the main points on which the future development of Central African commerce depends; and to offer some general observations and suggestions.

ESTIMATED POPULATION.

Nearly the whole of the districts just referred to are, more or less, thickly populated. The total population of Africa has been estimated,* by eminent authorities, as probably about two hundred millions (200,000,000), and, doubtless, considerably more than half of these people are to be found in Central Africa, between the Sahara and the Zambezi.

The population is, of course, almost wholly found along the banks of the great rivers and their tributaries, and in the neighbourhood of the great inland lakes. Taking the above figure as a basis, the Congo valley is probably peopled by some forty millions, the Niger valley by at least twenty millions, the basin of Lake Tsad and its affluents by fifteen millions, the Upper Nile and the great lakes by thirty-five millions, the northern Zambezi valley by from five to six millions, and we may allow another ten or twelve millions for the banks of the smaller rivers and lakes.

TRADING INSTINCTS OF THE NATIVES.

Almost the whole of these peoples are keen traders, and will take an unlimited quantity of European manufactures in exchange for the natural productions of their country, if only they can be brought within their reach. The demand for European trade-goods will, of course, become an ever-increasing one. As the natives become more and more acquainted with civilisation, their requirements will necessarily increase in the same ratio; besides which the increase of population among the African tribes will be greater, for slavery and inter-tribal wars will become less as the influence of the European protecting states grows stronger. The African is able to adapt himself to the habits and manners of European civilisation; and, therefore, will, like the Hindu, thrive and increase as it advances, rather than die out before it, as does the North American Indian and the Australian native.

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* There is much difference of opinion on this point. Some statisticians have considered the population of Africa to be as high as three, and even four, hundred millions. Mr. Stanley puts it at 176 millions; Professor Hermann Wagner and Dr. Supan believe it to be slightly below 164 millions; while Mr. Ravenstein says, "even 127 millions is a high figure."—J. H. R.

BARTER GOODS.

The goods which these millions of Africans will readily accept from us in exchange for their products, and as payment for their labour, consist of the following: Cotton goods of various kinds—these form the principal article of exchange among the natives throughout the whole of Central Africa. Beads, and brass and iron wire are in large demand in most districts in the interior, in the neighbourhood of the great lakes, and on the Upper Congo; and in some remote districts cowrie-shells are readily accepted. Salt, in the form of small cakes, passes as money among the people of Abyssinia, Kordofan, Darfur, on the Upper Niger, and in the neighbourhood of Lake Tsad; and is, indeed, a favourite article of exchange throughout almost the whole of Central Africa. Among the other purchasing commodities may be mentioned cloth and woollen goods of various kinds, hosiery, hardware, earthenware, cutlery, tobacco, smallwares, and sundry articles of all sorts.

Of course a large demand exists among the African natives for guns and gunpowder, with which to defend themselves from the attacks of their enemies, or to make war upon their, perhaps, unoffending neighbours. The African is also fond of strong drink, and being an habitual tippler, and oft-times a confirmed drunkard, he is always ready to purchase European spirits, which are so much stronger than the various intoxicants of native manufacture. The importation, however, of all three of these articles will, in the future, be regulated and checked to a very large extent, and, in some places, prevented altogether, by the various European states who now hold sway over the "Dark Continent," in accordance with the decisions of the recent Brussels Conference. This prohibition will, of course, not be very satisfactory from the point of view of the mere sordid trader, but it will be an undoubted advantage, in the long run, to the native, although he, perhaps, knows it not.

COMMUNICATIONS.

Having seen what can be produced in Central Africa, and what the native is willing to take in exchange for the riches of his land, the following questions naturally arise: How are these commodities to be got to the coast? And how are the trade goods of the white man to reach the market of the African? On the solution of these problems hangs the whole future development of the products of the "Dark Continent"!

OLD METHODS.

Up to the present time the only way of getting products to the coast, and manufactures into the interior, has been by the slow, laborious, and expensive method of carriage on the shoulders and heads of slaves or hired porters, who all the time they are on the long journeys are "eating their heads off," and so reducing the value of the very small loads they are able to carry. Almost the only article that has, hitherto, been worth the cost of such expensive carriage has been ivory. Rapid communication and cheap carriage is, therefore, what is really wanted for development.

NEW METHODS.

There are three principal methods of overcoming this difficulty, each one of which is now being adopted by the great chartered companies, and European states, who have undertaken the work of opening up the country, and developing the trade, of Africa. These are the establishment of river and lake navigation, the building of railways, and the making of wagon roads.

WATERWAYS.

All the great African rivers, and many of the smaller ones, are more or less capable of being navigated by light-draught steamers. The Nile, from the Mediterranean to the Albert Lake, is navigable throughout its length, except for the falls near Dufile, in Equatoria. Of course, there are many other cataracts or rapids, but, with the exception named, they are all passable at certain seasons.* The tributaries of the Nile, viz., the Atbara, Blue Nile, Bahr-el-Ghazal, Sobat, Asua, with the Somerset Nile, connecting lakes Albert and Victoria, and the Semliki River, between the Albert and the Albert Edward, are all more or less navigable.

Taking the East Coast, we find the Jub River navigable for four hundred miles, the Tana for three hundred,† the Sabaki for one hundred and fifty, and the Rovuma for two hundred; while the Zambezi is intermittently navigable for several hundred miles. The mouth of the last-named river is much barred by sand-banks, which render navigation at the entrance difficult, but not impossible; this difficulty once passed, the river is easily navigated to the first cataracts at Kebrabasa, about three hundred miles distant. Passing this place the river is again open at intervals till the mighty Victoria Falls are reached, and beyond this point the main river and its numerous tributaries between them afford at least a thousand miles of inland waterway. The Shiré River connects the Zambezi to Lake Nyasa, but the Murchison cataracts prevent unbroken navigation between them. There are also several smaller rivers on the East Coast which are more or less open for steamers.

On the West Coast we have the mighty Congo, the second largest river in the world, which, with its tributaries, affords no less than from seven to eight thousand miles of navigable water. Nearly the whole of this vast waterway is, however, cut off from the coast by the Livingstone Falls, which extend for some two hundred and fifty miles below Stanley Pool, leaving only about one hundred miles of actual navigable river open to the ocean. The Congo Railway, which is now in course of construction in the neighbourhood of the Livingstone Falls, and which is expected to be complete about 1894, will overcome this obstacle, and open up the greater part of the river and its affluents to rapid intercommunication and cheap transit. The tributary streams, many of which are themselves extensive rivers, will then give an entrance into the very heart of the Congo State territory on both the north and south banks of the great river, and thus bring the interior tribes into direct touch with the markets of Europe.

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* See Keith Johnson's "Africa," page 244.

† Since this essay was written it is reported by the *Times* that the British East Africa Company's steamer Kenia has successfully navigated the Tana River to Baza, situated three hundred miles from the coast, which place it reached on June 17th last.—J. H. R.

The Niger is more or less navigable from the Gulf of Guinea to Timbuktu. The river is broken by cataracts and rapids near Busa, to which place, situated some five or six hundred miles from its mouth, it is now open to steam navigation. A railway here, of a hundred and fifty miles in length, would open up another stretch of navigable water, at least one thousand miles long. The Benue river, which is a tributary of the Niger, also affords several hundred miles of navigable water.

The Gambia, the Senegal, the Ogowe, and other smaller rivers also, between them, afford several hundred miles of navigation on the West Coast.

The waters of the great lakes will enable steamers plying on their bosoms to serve the native markets, and collect the produce of the millions of people living on their shores.

EXISTING STEAM NAVIGATION.

On the Upper Congo there are already over thirty steamers engaged in trade, many steam vessels are plying on the Niger, the East Africa Company have a steamer on the Tana River, the Zambezi and Shiré are already ploughed by steamboats, the Senegal is navigated by steamers up to Kayes, where the railway begins, while the Kwanza (Angola) is said to have been the first river of Equatorial Africa on which steam navigation was established. Steamers are also to be found on lakes Nyasa, Tanganyika, and Victoria. The Upper Nile and the Albert Lake have been navigated by steamers for some years, but these vessels have now all fallen into the hands of the Mahdists.

NATIVE NAVIGATION.

On many of the smaller rivers and the tributaries of the great lakes, which do not permit of steam navigation, a useful transport trade could be done by means of small boats or native canoes. The natives would, probably, not be slow to take advantage of such means of putting themselves in touch with the traders who might be established at accessible points.

RAILWAYS.

The large inland lakes, and the upper navigable waters of the great rivers, will require to be put in connection with the coast, or the lower navigable reaches of the rivers, by means of railways, as is now being done on the Congo. The British East Africa Company are projecting, and, indeed, have commenced to build, a railway which is to connect the Victoria Nyanza with the port of Mombasa. A railway has been proposed, by both Sir Samuel Baker and the late General Gordon, which, starting at Suakin, on the Red Sea coast, should cross the desert to the Nile, in the neighbourhood of Berber. This, if ever constructed, as it probably will be in the not very distant future, will tap thousands of square miles of the valuable and productive country of the Upper Nile valley, and render of practical service no less than two thousand miles of navigable river. A railway, three hundred miles in length, would connect the navigable waters of the Niger with Lake Tsad, and thus bring the populous shores of this great lake, which has an area of ten thousand square miles, with those of its tributary the Shari, navigable for five hundred miles, within reach of the European markets.

BULLOCK ROADS.

In the future it will probably be found necessary to connect the great lakes by means of railways, but for a considerable time to come cart roads, such as the Stephenson Road, which already connects Nyasa with Tanganyika, will probably be found sufficient. Bullock or carriage roads past the cataracts in the rivers, such as Stanley Falls and others on the Upper Congo, the Murchison Falls on the Shiré, and the Kebrabasa Rapids on the Zambezi, &c., will be found necessary for trade purposes, and each of these may at no very distant time grow into railways.

BEASTS OF BURDEN.

In many parts of Central Africa, where the tsetse-fly is absent, transport, by means of bullocks, asses, mules, or elephants, might be successfully established. The African elephant has so far, it is stated, not been successfully tamed, but this difficulty may in the future be overcome; at any rate, the Indian elephant might be imported for the purpose. An elephant will carry a load of no less than eighteen hundred pounds, so that it is worth some pains to render of service such a valuable means of transport.

NATIVE MIDDLEMEN.

One of the greatest drawbacks to trade with the interior tribes of Africa in the past has been the presence of the native middleman. This individual is naturally very jealous of the trader getting at the interior peoples first hand. The result of the middleman system in the past has been to prevent trade on any large scale being done with the inland tribes. The white traders' goods have only been allowed to gradually filter through to the more distant peoples, whose ability to purchase at all has been limited, owing to the high prices current, due to the heavy demands of the extortionate middleman, who has fattened upon the large commissions he has reaped by acting as the only intermediary or channel through which the goods of the original seller have reached the hands of the final buyer.

RESIDENT AGENTS.

In order, therefore, to establish and successfully develop a remunerative trade with the natives of the interior, it is necessary that the trading houses should send agents to, or that individual traders should personally visit, the inland districts, and do business direct with the natives. The difficulty and drawback, due to the middleman, will, probably, disappear when the trader can, himself, do business first hand with the interior tribes. The European on the spot can, of course, also foster the demand for trade goods, and his presence will do much to elevate the condition of the natives, and thus increase the present demands and create new ones.

USE FOR THE ARAB.

To supplement the European trader or agent, it is possible that in the future the Arab may be found useful. The overruling authority of the European states will prevent his indulging in slave-raiding and slave-buying. The Arab has proved himself to be a successful direct trader with the natives in the past, and when he finds that it is no longer possible for him to carry on the slave traffic, and that it, moreover, pays him to engage in legitimate trade, it is probable that he will become useful in the development of African commerce.

HINDU MERCHANTS.

On the East Coast, in the neighbourhood of Zanzibar and Mombasa, a large portion of the coast trade is in the hands of Hindu merchants. These traders are now settling in the territory of the East Africa Company, and no doubt, as the country is opened up and communications are established, they will settle further and further inland.

FIELD FOR EUROPEANS.

There is, however, a very wide field for Europeans themselves to successfully engage in trading operations in the interior of the continent. Many of the districts, especially the high-lands, are healthy and are well suited for the residence of white-people.

HOSTILE TARIFFS.

One of the great drawbacks to the development of trade will probably be the hostile tariffs already established or about to be established, in their African possessions, by some of the European powers. This will, doubtless, in the future lead to what has been well called a "war of tariffs," and will cause a considerable check to traders other than those of the nation which administers the district. It is outside the province of this essay to enlarge upon this point. It may, however, be pointed out that in those enormous portions of the continent now under British rule there is a very wide field for the trader, where his operations will not be hampered by vexatious and prohibitive imposts.

IMPORTED INDUSTRIES.

Notwithstanding the great number of natural animal and vegetable products of Central Africa, and the vast extent of many of them, the future development of this part of the continent will probably be due more to the fostering of imported industries and the cultivation of introduced products. Many of the districts promise well for such industries as horse and cattle breeding and sheep farming. Ostrich farms would, doubtless, be successful in some places, and fowl and poultry ranches would, probably, succeed well. In some of the cattle districts a large trade might be established in the preparation of tinned and potted meats. Enormous quantities of cereals, such as wheat, barley, rice, maize, and other grains, might be cultivated, and would, doubtless, well repay the trouble.

FRUIT-GROWING AND PRESERVING.

There seems to be a good opening for a large fruit cultivation and trade in many districts. All kinds of rich fruits could be grown in great abundance all the year round, and sent to the European markets. An extensive business could, doubtless, be established in tinned fruits. If properly worked, this trade might in the future very well be expected to compete with that of America. In the United States a large import duty is paid on the tinplate out of which the cans for the fruit are made. This, of course, tends to largely increase the selling price of the goods. A very large trade might also be done in tinned tomatoes. They thrive well almost throughout Central Africa, and might be grown in prodigious numbers. Bananas could, probably, be treated in the same manner as is now done with other fruits, but this is a question for experts to decide. Incredible quantities of this fruit can be easily grown in Africa. The only question seems to be: Can they be successfully preserved in tins?

The cultivation of wine fruits, and the manufacture of wines, might probably be adopted with success. If any, or all, of the above suggested trades could be successfully established, there is little reason why the list of kindred industries might not be very largely increased.

LABOUR QUESTION.

The success of such proposed imported industries would depend, of course, upon a plentiful supply of cheap and intelligent labour. Chinese might, perhaps, be imported with success in some districts in furtherance of such schemes, but the great hope is in the African himself. There seems to be every promise that native labour will gradually become of great value. The African is both intelligent and tractable, and experience has in the past proved that, given the necessity to work, he is able, willing, and satisfactory. It is needless to enlarge upon this point here; it is sufficient for the purpose to remember that Mr. Stanley and other African experts are convinced that the African natives, if properly led and directed by Europeans, are capable of doing wonders.

The question of the repatriation of certain districts of Africa, by civilised negroes from the United States, which is so strongly advocated in many quarters, might become an important factor in the development of Central Africa, but its discussion scarcely seems to come within the scope of this essay.

PROSPECTS FOR THE FUTURE.

The great African continent, with its immense animal, vegetable, and mineral treasures, its rich and fertile soil, and its teeming millions of intelligent people, has been tardily taken in hand by the nations of Europe. But, now that the enterprising peoples of the earth have at last seriously turned their attention to its development, the future of Africa, from a commercial point of view, is decidedly promising, and its general advancement is assured.

In the United States of America at the present time millions of tons of coal and iron are being worked annually, while each day witnesses the production of hundreds of millions of cubic feet of natural gas, and each year millions of barrels of petroleum. We have as yet little knowledge of the existence of a similar mineral wealth in Africa, but considering that the enormous riches of America which are to-day being worked in such prodigious quantities were both unknown and unthought of, comparatively speaking, only a few years ago, we are led to ask: What may not the future open to us in "the last of the continents"? Why may not Africa in time to come prove to be as rich in minerals as the "New World"? And why may not the great overlapping waterways, the Nile, the Congo, and the Zambezi, like the twenty thousand miles of navigable water of the Mississippi and Ohio, play a great part in the collection and distribution of vast natural wealth?

It must not, however, be expected that Central Africa can be opened up, its people civilised, and its commerce developed quickly and by sudden bounds. The work of development will doubtless be slow, but it will, nevertheless, be both constant and sure.

BOOK NOTICES.

Heinemann's Scientific Hand-book. Geodesy by Professor J. Howard Gore, Columbian University.

It is to be anticipated, in treating the early history of this, in common with the other sciences, that received notions and familiar phraseology should to a considerable degree assert themselves, and that the work before us does not form an exception to the rule is therefore not surprising. We think, moreover, that justice has barely been done by the writer to the opinions, as they have come down to us, of those early philosophers who first conceived and promulgated the idea of the globular form of the earth. The book's special feature is the account given of the more prominent surveys which have been made for the purposes of cartography and geodesy, and in delineating the methods employed to secure accuracy of measurement. The details furnished by the author will be found of considerable interest.

MONKS HALL, ECCLES.

GEOGRAPHY IN NEWSPAPERS AND PERIODICALS.

(See Illustrations, pages 91, 104, 123, 136, &c.)

[Read to the Members, in the Library, Wednesday, February 25th, 1891.]

(A considerable number of English and Foreign newspapers and journals were exhibited in illustration of the paper.)

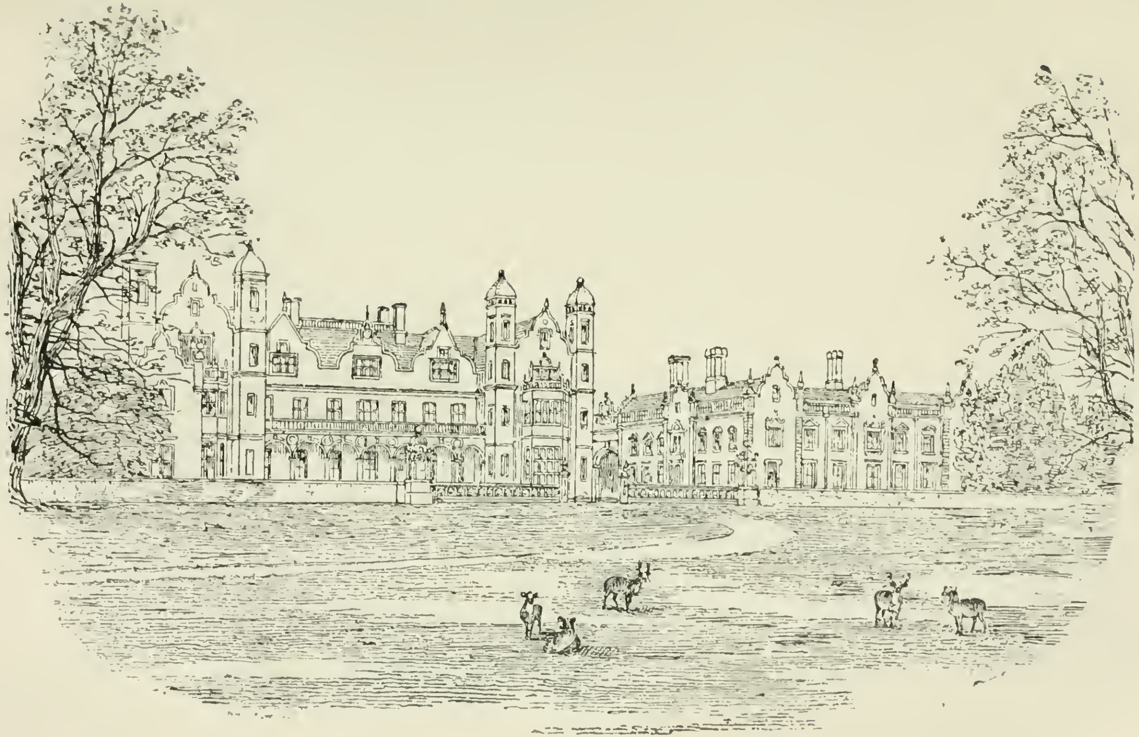
THE subject of Geography, as it appears in the daily paper of to-day, is an interesting one. Forty years ago the bi-weekly paper, comprising a summary of news, records of travel, notices of new books with delightfully long extracts, a novel page, and a corner for poetry, new or selected, was a far different, but to middle-aged people perhaps more valuable, production than the terrible daily paper of to-day. There were few, if any, illustrations in those papers of the old time.

A very bold venture was that of the *Dispatch*, which issued a very good Atlas some years ago, sheet by sheet, weekly to its readers. It seemed as though the Atlas would never be complete. We did not take it to the end, and I do not know if it ever was completed. May I say the paper of to-day is more exhausting? A bi-weekly paper gave time for reading and assimilating the contents. A daily paper, with its rush and hurry, seems to overwhelm one. It does seem a pity that so large a quantity of good geographic work should be so quickly and thoroughly buried as it is in the daily newspapers. And if one tries to give some of the articles and scraps of information a brief immortality by cutting out the slips, the task is quite hopeless, for they accumulate so rapidly that some day the "rubbish," as the housewife calls it, is reluctantly allowed to be carted away.

And leaving all other points, and confining ourselves to the one of Geography, what a very wonderful thing is the present day's press from that point of view. The paper is opened, and the intelligence of events of importance from every part of the world, which took place the day before, is all before us. It is almost impossible to read the short paragraphs of the telegraphic reports without a ready reference to the Atlas. But, besides the telegraphic reports, we have the more leisurely letters from correspondents abroad, and reports of speeches and lectures relating to travel and labour in foreign climes. We are in Cowper's case, when he sings—

"He travels and expatiates as the bee.
. . . .
He sucks intelligence in every clime,
And spreads the honey of his deep research,
At his return, a rich repast for me.
He travels, and I too."

Some of the daily and quite a number of the weekly papers are now using illustrations and maps. We have had nothing to approach the *Temps* in the illustrations to the story of the journey of Prince Henri of Orleans, or of the splendid Map of Central Asia issued by the same journal. The maps in the newspapers, so far as we have seen, are very poor. The rapidity of production prevents anything more than the merest outlines or diagrams being made. These are, however, sometimes of great value, particularly when the place or country dealt with is one but little known.



CAPESTHORNE HALL.
(Example of modern Newspaper Illustration.)

The *Newcastle Weekly Chronicle* has lately been printing blocks, illustrative of North of England scenery, of great beauty. The drawings are very clear, and the general effect is very soft and sweet. No other newspaper has approached these prints; and the birds drawn by Duncan, which have for a long time been produced, are very remarkable. They make one think another Bewick has come, and they must make a naturalist's heart rejoice from the clearness and beauty of their production.

The letters in our Manchester papers on foreign countries are at times of a high class—the letters in the *Manchester Guardian* on Nyasaland, the letters from Mr. Freeman on the Balkan Lands, from Mr. Evans on the Eastern Peoples, and on Greece, are very valuable contributions to our knowledge, and the local illustrated papers of Mr. Rimmer are interesting and useful. In the *Courier* letters of great ability from Mr. Curzon on Central Asia and Persia. In the *Manchester Examiner* a series of very interesting and graceful letters from Mrs. Bright on Denmark, Sweden, and Norway. The illustrated articles on local geography in the *Weekly Times* are very well done, and most interesting; and the *City News* is a perfect mine of geographical knowledge, both locally and generally. Some capital papers have been illustrated in the *Sunday Chronicle*; and, in fact, there is hardly a paper of any kind issued which does not contain information on geographical subjects more or less valuable.

The papers from outside places, from abroad (*Le Temps*, &c.) and from America (the *New York Sun*, &c.), show that other cities and peoples are quite alive to the interest of the subject, and are following it up very keenly.

In the magazines, I should put the *Century*, *Scribner's*, and *Harper's* at the head. Month by month articles appear in these journals beautifully illustrated and well written, not only on American districts but on European. A fine series has come to me in one of these journals on English Cathedrals and Cathedral Cities, another on London, and in two of these journals Southern California, Western America, Florida, and Canada have appeared. Africa, India, and China have been written of, and a splendid series of papers on Physical Geography have appeared by Professor Shaler. Statistics, historical disquisitions, and geographical descriptions abound.

The English journals plod on their way. Occasionally a few brilliant articles, like those by Mrs. Craik on Donegal, appear. But the English idea is solidity and slowness, and the interest in the subject suffers.

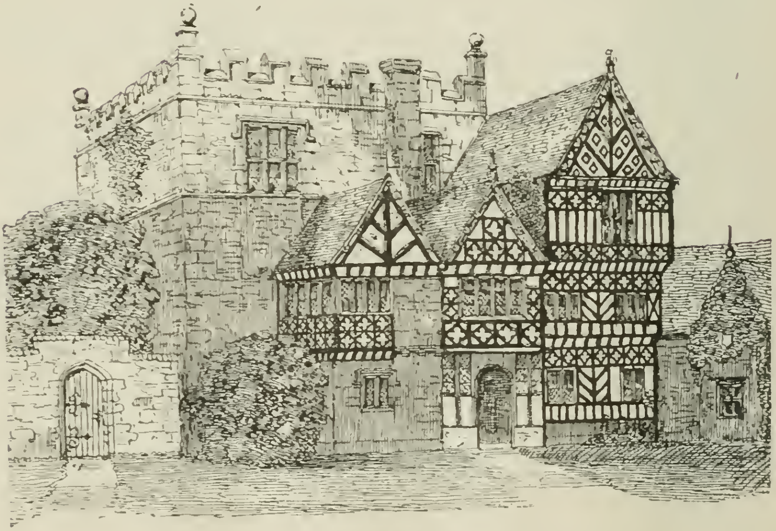
We do not wish in these remarks to depreciate the work being done in English magazines. Some of it is very excellent. The *Magazine of Art*, *Good Words*, and a large number of other journals are giving attention to the subject. It is one which will repay attention, which is always new, arrests the attention of the reader, and good maps and fine illustrations are never thrown away.

In this short communication to the Society nothing more can be done than to indicate the interest and value of the subject. Members can follow it out in their own way, and may preserve from oblivion many a paper they will find valuable for reference in time to come.

The weekly illustrated papers are now full of beautiful work, and we are greatly indebted to them for a fuller knowledge of distant places and peoples.

Some examples of illustrations are given by the permission of the publishers of the papers, and we are much indebted to those who have permitted our members to see these examples of newspaper illustration.

INN AT BACUP.



TURTON TOWER.

(Examples of modern Newspaper Illustration.)

MEXICO.

By Mr. F. G. BURTON.

[Addressed to the Members in the Library, Tuesday, March 24th, 1891. Mr. Wm. Ure in the chair.]

When I was first invited to read a paper on Mexico before your learned society, I felt considerable doubt about my ability to tell you anything of the country I have visited which you would deem worthy of hearing, for degrees of latitude and longitude, heights of mountains, and dimensions of lakes and rivers, as indeed most other forms of figures, are to me unknown quantities ; but I was assured that you do not merely interest yourselves in physical geography, but that you extend your researches into the allied regions of the habits and history of the inhabitants, and how the present conditions of the country are affected thereby, and as I have used what little opportunity I had for comparing the present condition of the Valley of Mexico with the description so graphically, albeit poetically, given by Prescott, I thought I might perhaps in some way interest you, and that you would pardon my inability to convey instruction.

I left England on the 29th of June, 1889, in the s.s. Servia, and need hardly tell you that a voyage across the Atlantic at that time of the year, in a Cunard steamer, is one of the most delightful of life's incidents, and a journey by the Southern Pacific Railway in a Pullman car is almost equally pleasurable, although it is rather warmer than on the sea. I entered Mexico by the Central Railway, and the northern part of the country which we traversed is to a large extent quite barren. An extent of volcanic region appears wearisome and disappointing to the traveller, and even the more cultivated regions afford but little signs of the luxuriant vegetation which we are led to expect in so tropical a climate. This is chiefly owing to the want of irrigation, for wherever irrigation has been judiciously and sufficiently supplied, the luxuriance of the crops amply testifies to the natural fertility of the soil. Thus, Indian corn, which in the United States attains its full and towering height, generally appears in Mexico to be dwarfed and stunted, not only in height, but also in the size of the grain ; but where the fields are irrigated, the crops of maize attain to as great luxuriance both in height and size and weight of grain as in Louisiana. The reckless denudation of forests by the early conquerors, to render the valley and other portions of the country more like their own beloved Spain, has probably also interfered with the rainfall and storage of water, and rendered barren once fertile land. A seven days' railway journey brought me to the city of Mexico, where we arrived early in the morning, and before it had become uncomfortably hot. A railway station in any part of the world is not a classical building ; a railway station in America is generally more inartistic, more slovenly, than in England. The station, or rather stations, of Mexico are no exception to this rule, and do not exhibit the involved tracery and spiral columns of the Gothic architecture, or the majestic simplicity of the Ionic style, but are simply roofs of glass supported by pillars and girders of iron ; but no sooner is the traveller outside the station than he finds himself in a country totally different from anything which his English experience would lead him to expect. Magnificent and broad streets, planted with trees along the side paths, are thronged with gaily-dressed, merry-looking, chattering people, whose dusky skins and dark hair proclaim them "Sons of the Sun." Gaily-caparisoned horses, bestrode by still more gaily-dressed cavaliers, handsome carriages occupied by still more handsome signoras and señoritas, tramcars drawn by sturdy mules, baskets of oranges, bananas, and pine-apples on the heads of hurrying cargadors, pass by in bewildering confusion, giving the impression of wealth and splendour and sybarite ease alongside of hardy and toilsome labour. The architecture of the city is equally striking. The larger houses have massive walls with but few windows looking out on to the street, and those carefully barred with iron rails to guard the treasure within ; doorways lofty, but protected with doors massive as those of a mediæval fortress. The outside appearance tells but little of the picturesque patio, radiant with geraniums and roses and other gorgeous flowers, which in this semi-tropical climate seem to spring to the light they love so well ; of the half-barbaric beauty of the verandahs, curtained with tapestry, and the lounging señor and his indolent family thereon, who, shutting out the world, have within their own domains, here in the very heart of the city, with all its plots and scandals and conspiracies without, a very Eden of their own, fresh and fair as a sequestered Devon valley or a corner of sunny Kent. Public buildings (sometimes ornamented with trellised windows, but very frequently depending for light and air on their inner court) rear themselves here and there among the mansions of the better class ; and pulquerias and tiendas, some worthy of a place in a London West-end street, others little larger than Indian huts. Churches and convents and monasteries, now too frequently diverted from their original purpose, are met with at every turn ; and all these buildings are so cleanly washed in white or pale yellow, or blue or drab, that the sun's rays seem rather to gain in effulgence from their contact with this earth than to lose their primal brilliancy as they do in the fogs of murky Manchester. The air is balmy and exhilarating, making one feel as though existence were worth having, not for the pleasures it brings, but for the very sake of existence itself. But the air, like everything else in the country, is false and treacherous, and bears with it the germs of typhus and diphtheria, and has no recuperative power to give health and strength to the invalid.

The Valley of Mexico is fairly populated now, and exhibits a good example of industry and agricultural labour. But the Valley of Mexico is the centre towards which all that is best in the country gravitates, and it must not, by any means, be taken as a fair criterion of the condition of outlying provinces. The residence therein of the wealthy, and the comparative density of the population, give it great advantages over other districts. For the great difficulty which has to be contended with, in developing the resources of the country of Mexico, is not so much the want of communications—although the roads are bad, and English investors are being urged, from time to time, to entrust their savings to Mexican railway contractors—but it lies rather in the want of a sufficient population to cultivate the soil, and to make use of its natural resources. Thus, lands which are admirably adapted for the growth of coffee, tobacco, cocoa, and all the tropical and semi-tropical products, for which there is an increased and increasing demand, are, for want of adequate labour, left as pasture lands, or allowed to degenerate into scrub. The population (even allowing that the estimates made by the contemporaries of Cortés are exaggerated) must, at one time, have been immense, compared with the present, judging only from the remains we find about the country of former extensive and apparently populous cities ; but the cruelties of the Spaniards and the scourge of smallpox have terribly reduced it. Emigration, on a large scale, cannot be hoped for or expected, for the wages paid to labourers are low, and the cost of living, as European workers live, is high. The climate of the plateaux, with its warm days and cool evenings, with its slight variation between winter and summer, does not, to the Aztec, necessitate such a variety of, or expenditure on, clothing as is required here; nor do the natives require such commodious houses or furniture as European labourers look for. A small hut (just large enough to stand in), with a mud floor, a few mats, and a cooking pot or two, will satisfy the ordinary peon; whilst a buckskin suit on his wedding-day will serve him both for riding and sleeping in far on towards the end of his career. But conditions like this would hardly suit labourers from Europe, and the prospects of gain are insufficient to tempt any race, as a working race, to the soil—unless perchance it may be the Heathen Chinee. Yet Mexico was thoroughly appreciated by the Spaniards as an outlet for adventurous spirits from home, and as a feeder of their trade. The buildings they erected bear upon them the impress of this idea, for they are massive enough to stand for ages, and yet withal built in the half Moorish character, covered with the delicate tracery their artistic feelings made them love so well. The monk followed the soldier, and erected houses more gorgeous still, while near at hand were convents and monasteries for the lodging of the attendants. Revolutions and changes wrought by war, have turned the monasteries and convents into public libraries or tram-car stables, or warehouses and tiendas, or other similar purposes; whilst the churches are either closed or permitted to remain open so shorn of their splendid ritual as hardly to be recognised as churches by a Catholic from Rome. The altars, the pictures, and the massive pillars still remain. The belfries are still hung with the sweetest-toned bells the world has ever heard. But neither on Sunday nor Saints' Day must the bells peal forth nor religious processions enter the streets! Nay, even a dying penitent cannot have the host carried to his bedside except it be hidden away in the recesses of the priest's pocket. But it is not only the outward observance of religion which has been degraded and forbidden, but those inner feelings and impulses which religion inculcates have also degenerated in the Spanish-Mexican race. Of truthfulness there is none. The only inducement a Mexican ever feels to respect his promise or shape his words to facts is benefit to himself, and if convenience or profit lead him to say what is not true, to break his pledge, or defraud his neighbour, his conscience does not trouble him in the least. In public and in private affairs this is equally seen. Judges receive bribes, merchants intrigue, and bribe, and scheme to get on juntas, that once there they may levy blackmail on all who unsuccessfully oppose their tricks and schemes, or in other ways come under their influence. Ministers high in office take enormous bribes for granting concessions they know can only benefit their country, and share these bribes with men who have been elected to protect the rights of their constituencies. Nay, even he who must not be censured in byeways of Mexico without bated breath, whose stern hand has ruled the country in peace for the past six years, even *he* is not deemed unapproachable with sufficient dollars, although they perchance must reach him through a somewhat circuitous channel. Merchants and their servants give and receive bribes. They give to the purchaser's employés that their wares may not be pronounced unworkable, and receive from all sorts and conditions who wend their way to Mexico to sell American or German goods, and they do this so knowingly, so unblushingly, as to make one wonder at their good faith, if such a righteous term may be used in connection with that which is so wholly unrighteous.

The import trade of the country is very largely in the hands of the Americans, French, and Germans, the Americans being served by their better geographical position, and the control of the railways being either in the hands of Americans or Americanised Englishmen. The Germans and French have increased their hold on Mexico of late years by the establishment of branch or retail houses in the cities of

Mexico, Puebla, and Vera Cruz, which are largely controlled or financed from the mother countries, but still more by the facility with which they adapt themselves to the manners and customs of the people. For much as a Spaniard loves a bribe, he still more loves that courtesy, that deferential treatment, which places him in his own mind on good terms with himself; and the straightforward bluntness of an Englishman, even when offering him a good and tempting bargain, is more obnoxious than being swindled by a fellow Latin, who will modulate his tones and pat him on the back for half-an-hour. It is this brusqueness of manner, earnestness of purpose, and economy of time which stand in the way of the English, and partly also of the Yankees, retaining the trade of the country, and English merchants must learn that if they are to extend their connections with the Spanish-American countries (for the remark applies equally to all), they must establish branch houses, and place in charge of them managers who, whilst honest as our traders ever have been, will content themselves listening for days to the idle chatter of a possible customer, and spend hours in rolling cigarettes with the possible purchaser of a drilling machine. For mañana (to-morrow) is not merely a term, it is a power in those countries where every action, every decision, is deferred to the last possible moment, and to do business with such a race successfully we must both recognise the power and adapt our measures to its existence. No doubt if we could deplete the country of Spaniards and half-castes, and in their place implant, in the temperate portions, sturdy colonies of Scots, as we once did in Ulster, not only would its productiveness be greatly increased, but the rate of wages and standard of living would also be raised, and it would become vastly more advantageous a field for emigrants than Canada, or some of the United States. But the depletion cannot be hoped for, and the Government cannot either be improved—at least in this present day—or rendered so stable as to insure safety for landed investment, and so a race of sturdy yeomen, half-squatter, half-venturer at their commencement, rising gradually into wealthy though hard-working farmers, cannot reasonably be expected. We must deal with the country as it is, and adapt ourselves to the ways of its inhabitants, if we are to do business with them, since they will not adapt themselves to ours.

The canals which intersected the streets of Mexico no longer exist; the lake which once surrounded the city has receded miles away. We still walk along the causeway by which Cortés retreated to Tacuba, but it is now a wide street, with firm dry land around it. We still have marked on a wall the words "Salto de Alvarado" (Alvarado's leap), but not even a ditch remains for the ghost of that valiant cavalier now to clear. But the level of the city is so near the level of the receded lake that any sudden tropical shower renders a deluge from the storm water both possible and probable. Only three years ago the houses in the Callé Humboldt, in which street General Pacheco, the Minister of Public Works, resides, were flooded to the depth of several feet, and ladies returning from the theatres had to be conveyed to their apartments on the backs of cargadors. Centrifugal pumps, manufactured, I believe, by Messrs. Gwynne, of London, have since been laid down, and at the commencement of a shower are set to work to pump the water from the street sewers into the main canal, and these have had some beneficial effect, although the rainfall during the past season has been too light to afford an adequate test of their efficacy. A much more ambitious scheme is at present in progress, and two eminent firms of English contractors are engaged in deepening a canal and boring a tunnel for the conjoint purposes of draining the city and removing the overflow water of the lakes from out the valley; but it would be premature to hope too much benefit from these works, as the levels have been taken and the plans compiled by Spanish engineers, and the possibility of errors therein is not a remote one. The cost of these works will be defrayed out of the city revenue, and the onerous duties imposed on every article which enters the gates, from bales of Manchester goods to native woven hats, and native raised eggs and poultry, certainly demand that the city fathers should do something for the benefit of the people they tax so heavily.

The finest square in Mexico is the Zocullo, at one end of which stands the cathedral, on the very spot, it is said, where the temple of the Aztec war god once stood, and along the whole of one side is the National Palace; the centre is occupied with flower beds and fountains and a band stand, whereon the several military bands play on Sundays and feast days, for the Mexican Government is sufficiently socialistic to provide music as well as schools for its people. To a student of socialistic problems this provision of amusement (for it extends even to fireworks and the illumination of the Zocullo on high holidays) would afford interest, and he would learn how this governmental solicitude for the happiness of the people tends to crush out all private efforts in such direction. The theatres can only retain their popularity by the provision of unlimited ballets and doubtful French plays, and the only really profitable places of amusement are the bull-rings and gambling saloons, since with these the State and State taxes do not at present compete. Opening from the square are some of the finest streets, leading in the direction of the Alamada, whilst beyond the Alamada is, probably, one of the finest drives in the world, the new paseo—the mad women's drive, as it was somewhat irreverently named—leading to the exquisite palace of Chapultepec, through the gardens and woods of which the unfortunate Montezuma once happily wandered ere Spanish bandits sought his shores. From this paseo may be seen the beautiful snow-capped mountains of Popocatepetl and Ixtaccihuatl, whilst all around stand those nearer hills which circle the valley. The apparent distance of these hills is most deceptive, more particularly in the bright mornings of the rainy season, for though some miles away, they appear to be closing up the ends of the streets. The woods of Chapultepec are most lovely, the huge cedar trees standing wide apart from each other, but forming a complete canopy with their boughs, whilst the Spanish moss which hangs from them glistens like a network of silver. In these shady recesses may be met alike rich and poor, for there is no restriction placed on their decent use, and many a family group may be observed, sometimes under the very tree where Montezuma once sat, eating their frugal repast of tortillas and pulque. From the springs within these grounds the southern portion of the city is supplied with excellent water, at present conveyed thereto by an open aqueduct, but it is intended to replace this with cast-iron pipes. Unfortunately out of the 998 pipes ordered from England for this purpose over 600 were cracked in transit, the result of bad packing or rather want of packing, and until these are replaced the work cannot proceed Half-way between the city and Chapultepec is the arsenal, and the piles of cannon balls and rows of cannon look formidable enough; probably they answer their intended purpose, for though old-fashioned and harmless against an invader, they overawe the natives, and influence the elections, and this, as we well know, is one of the chief ends of modern government.

Passing from Mexico to Puebla by the Vera Cruz Railway, we traverse the finest pulque district in the country. Apam pulque is noted far and wide, and the fields of the large Mexican aloes, from which it is extracted, look extremely picturesque with their straight lines and enormous green plants. Puebla is on a branch line, and the journey to it in any but the rainy season is torture, from the clouds of dust raised by the passing trains. The town is situated on a slope, and is washed by every shower, so that its drainage arrangements are better than the majority of Mexican cities, whilst in point of architecture it compares favourably with any of them. Puebla Los

Angeles has always been favoured with priests, whatever it may have been with angels. and the priests induced their adherents to crowd it with churches and monasteries, and support them with ample and well-favoured lands. The lands have been taken away under the laws of reform, but the churches have escaped desecration and are still devoted to their ancient purpose of matins, mass, and vespers. The cathedral is even more imposing than that of Mexico, its elevation more commanding, and its high altar of Puebla onyx more graceful and artistic than the usual gilded shrine. Its nave also is better filled, and with a more devout class of worshippers than in the capital, and the priestly offices are discharged with at least a trifle more of intensity than elsewhere. But the Indians of Puebla are much like the Indians of the Valley, rather too fond of lying, rather too fond of thieving, and much too fond of knifing each other when the pulque skin has been drained, whilst the Creoles here, as everywhere else, are most charming in manner, most false in word and conduct, and most covetous of other people's goods and chattels. The people work, the churches open, the bands play, just the same in the City of the Angels as in any other Sodom, but the people have somehow or other obtained the odour of sanctity, and neither the working, the church-going, the playing, nor other of the Sodomite pastimes, serve to dispossess them of it. A railway—the Mexican Southern—is at present being constructed from Puebla to Tehuacan, and thence to Oaxaca, passing through the fertile lands assigned to Cortés as his share of plunder, and thence, if capital can be raised, to Tehuantepec, on the Pacific coast. The opening of this line will place a rich and productive tract of country in ready communication with the rest of the Republic, and enable the mill-owners and landowners to obtain their materials from Vera Cruz, and send their produce there, by a much readier route than the mountain tracks across which it has hitherto been conveyed on donkey's backs, though whether the first two sections will ever pay the shareholders any dividends, and whether the third section, from Oaxaca to Tehuantepec, will ever pay working expenses, is extremely problematical.

Returning from Puebla to the Vera Cruz main line, we at length reach Esperanza, in time for a fairly-cooked and diversified dinner. We find an extra engine attached to the train, and additional brakesmen put on each end of the carriages to work the brakes. Our engineers (engine-drivers, as we should less euphoniously term them in England) and conductors are changed for more experienced and reliable men, and every wheel and shackle in the train is carefully examined and tested by the time-honoured and infallible scrutiny of a blow with a hammer. And we soon found all this care and precaution was desirable, for we were scarcely clear of the station before the warning whistle of the engine and the working of the brakesmen at the brakes told us we had entered on the incline. To describe the ride of the next three hours is impossible. The line winds along the face of the mountain, along the very verge of precipices hundreds of feet deep, turning by sharp curves backward and forward in the direction it has lately been traversing ; the train rushes painfully along ; the engines (which are of the Fairlie type) groaning as with the responsibility of such a load behind them, the brakes hissing and shrieking as they are screwed tightly down, and the passengers anxiously scanning the remote valley beneath, which seems almost lost to view in the distance. The administration of the line is most admirable, and allowing for the difficulties incident to the working of such a heavy gradient, the management is by far the best of any line in Mexico—indeed of any line I traversed from New York to Vera Cruz—and reflects the greatest credit on Mr. Foote, the general manager, and his staff. But the natural difficulties involved in the route taken, skilfully though they have been dealt with so far as engineering difficulties are concerned, are a serious disadvantage in the coming competition with which it is threatened, and holders of Mexican Railway shares may well quake for thoughts of coming dividends. Before many months are past, unless the usual dilatory character of Spanish work retards it, the Inter-Oceanic Railway will open through to Vera Cruz, and afford a direct route to Puebla, and thence on to Mexico, with very much easier gradients than those on the Mexican Railway. The effect will be not merely to divide the traffic, but probably also to reduce rates. But another and greater danger threatens not only the Mexican Railway but the Inter-Oceanic also. The Junta of Tampico have for some time been endeavouring to remove the bar at that harbour by the same method of lagoons which Captain Eads so successfully applied to the Mississippi at New Orleans, and have succeeded already in deepening the water over the bar. Should they eventually succeed, and success is deemed most probable by experienced engineers, in so increasing the depth of water over the bar as to admit ships of the class now belonging to the West Indian and Pacific Company's fleet, a fatal blow will be dealt to the trade of Vera Cruz, for the latter is a most unsafe roadstead during a "Norther," and has neither good anchorage, docks, nor wharves to recommend it, whilst Tampico harbour is land-locked, and for many miles of river has deep water close to the banks, so that wharves may readily be erected whereon the vessels could discharge their cargoes direct. The distance by rail from Tampico to the great emporium of Cuidad Mexico, is greater than from Vera Cruz, but this will be fully atoned for by the easier gradients, and the greater discharging facilities, whilst heavy machinery for the mining districts can be left at the several points *en route*, without incurring the delay which at present takes place, generally a week, sometimes a fortnight or more, in transferring from the Vera Cruz to the National line at Mexico. The Customs' officials at Vera Cruz, the police authorities—nay, even the consuls—have, to some extent, accustomed themselves to delays at that port—to delays and troubles with incoming ships, to blocked wharves, and irregular railway services—and learned to look upon these as incident to, and inseparable from, traffic passing through there. At Tampico, as yet, the Custom House is in miniature, and the Jefe Politico a squire of low degree ; and the increased importance of the place in the future, and the proverbial efficacy of the new brooms who will be appointed, may infuse into it, for a time at least, something of that life which is wanting in its older rival. The squire of old, who had yet his knightly spurs to win, was generally foremost in the fray, and the spirit which animated him is yet an active factor of human nature.

I must hastily revert to the trade of Mexico, for I fear I have already tried your patience with my discursive paper. The country is seemingly peaceable at present, and the Government of General Diaz is a strong one. The troops are kept well in hand, and changed from command to command at intervals, so as to prevent their becoming the tools of provincial generals, as in former times ; whilst the large reserve always stationed round the metropolis suffices to crush any incipient rebellion. But beneath all this seeming peace lurk seeds of trouble, trouble which firmness and wisdom may possibly avert, but which untoward circumstances may mature. The taxation of the country is ruinously heavy. Licences are required for every description of trading, from the princely transactions of a bullion merchant to the retail sales of a petty tienda ; stamp duties are imposed on all sorts of documents, on invoices, on receipts, on contracts, and traders' books ; and in addition to these imposts of the central and provincial governments, every city, town, and little village imposes its own particular tolls on all goods coming into or passing through its bounds. As an instance, I may mention that an American gentleman died a few miles outside Mexico, and before we could bring his body into the city for burial we had to pay a toll of 50 dollars (nearly £10). All this makes living very expensive, and prevents that distribution and movement of wealth so needful for the progressive development of a country. Again, the government, the legislature, the law courts, and all classes of officials are thoroughly corrupt, and seek each their own individual advancement rather than their country's benefit. Brigandage on any large scale has been suppressed, but outbreaks at remote mines which involve destruction of plant and machinery are by no means unknown, and European officials dare not venture amongst the native miners without an armoury of revolvers round their waists. For investment purposes, therefore, Mexican securities are somewhat less desirable than English Consols or Colonial loans, and I think this ought carefully to be remembered when new ones are placed on the market ; for a large crop are ready now for the promoter's hand whenever favourable opportunity offers. Coffee and tobacco plantations at Tepic, cigar manufactories at Vera Cruz, silver mines at San Luis, Potosi, and Pachuca, are all ready to promise to any likely purchaser dividends of ten, fifteen, or twenty per cent, which promise may or may not be redeemed, probably not. The owners of the properties are by no means foolish men, who do not know the value of that they are parting with, and the ways of company-mongers are obscure, and between the two the public are likely to lose money. But there is profit to be made out of Mexican trade, and a tolerably secure profit so long as the transactions are confined to legitimate trading, and do not trench on the region of financing loans and mortgages. The chief machinery and hardware house in the Republic is undoubtedly that of Roberto Baker and Co., a German firm, who have always on hand an ample stock, and an ample staff, well versed in the manners of the country. Their supplies are chiefly from Germany, some few classes of goods being obtained from the States, and although many of their customers prefer English goods, yet they succeed in retaining, and year by year increasing, a turnover which no English house there can approach. One London firm was, a few years ago, doing a good business in general machinery, but this has fallen away considerably the last two years, and chiefly through the principals being too busily engaged with larger contracts to attend to their general customers. They cannot now afford the time they formerly gave to back patting and hand shaking, and so the offended señors wend their way to more pleasing offices. On the other hand, a gentleman who was formerly connected with them, who studies Mexican manners and peculiarities, and carefuly avoids any hastiness of manner or urgency in bargaining, has within the last two years built up a prosperous business. He deals almost exclusively in Messrs. Howard and Bullough's cotton machinery—indeed, I think that the firm must in the first instance have financed the venture, and I have no doubt they are by this well satisfied with the result. It is on such lines as these the English houses may do business, not by hasty travellers rushing from point to point of the country expecting to find purchasers in as great haste as themselves ; and the business is worth doing even at the heavy cost of branch houses, for the profits are very large. On the machinery from 25 to 33 per cent is added by the Mexican houses to the invoice cost, insurance, and freight to destination, and very readily obtained, so that on a turnover of $100,000 a year there is a margin of profit after payment of all expenses, and a good firm ought to do considerably more business than this. Of the profits on cotton and woollen goods, I cannot speak quite so accurately, but when I tell you that I paid $8 (about 28s.) for an ordinary felt hat, and $6 (21s.) for a half-guinea silk hat, and that a suit of light tweed clothes costs $35 (about £6 2s. 6d.), and worsted morning suits about $50, you will admit that there are dollars to be made out of such a trade. Prohibitive tariffs do not keep out American, French, or German goods ; Customs restrictions, Customs fines, and onerous police regulations do not deter the merchants of those countries from forcing their way into so desirable a market. They know that the finer woollen and cotton goods cannot be manufactured in the country, must be purchased from without, and they know that Creoles love soft raiment, and Creole dames fine feathers, and will have them at any cost. The trade of England was built up by merchant venturers who incurred peril and hardship in every part of the globe to win the commercial battle. We content ourselves with sitting in our offices, and surrounding ourselves with scientific devices of telephones and cables, but the outside world which feeds us, which we once won for our trade, sees less than formerly of us, and so, in spite of our circulars, and cablegrams, and other devices for keeping our seats at home, they are passing us by to deal with other people whom they meet face to face, and whom they are learning to respect and trust as they once trusted us. Our West Indian trade has passed largely into the hands of the Yankees. Is our Spanish-American trade to follow? If not, English traders and English manufacturers must once more venture into the outer world and live there, and if in doing so they visit Mexico, I can predict for them not merely a most enjoyable sojourn in an enjoyable and romantic land, but an order-book which will prove profitable to them even in these unprofitable days, but which they cannot obtain by the agency of migratory travellers, or hasty display of photographs and samples, nor by any other of our present high-pressure measures, so repulsive to the worshippers of the Alpha and Omega of the Mexican vocabulary.

When my paper was so far written, a notice of Mexican trade advices appeared in the *Manchester Guardian* of March 7th, as follows:—

"The latest mail advices from Mexico bring news down to February 14. Business generally was said to be better than in January, but the market was still not active. Money was abundant, and merchants were not borrowing. A conference of economists convened by the Government had met and were discussing plans for unifying the State systems of taxation. The *Mexican Financier* says that many of the States maintain methods of taxation which make the new facilities for rapid transport by railways in every direction useless. As regards the market for textiles, the manufacturers of printed cotton goods are reported to have already contracted with the retailers for the consumption of the whole of this year's production. This was regarded as signifying a maintenance of prices unless the new Customs tariff should introduce some modifications in the duties upon foreign goods, which, however, was not anticipated. The manufacturers of cashmeres had not arrived at any similar arrangements with the retailers. The *Economista Mexicano* refers to important transactions concluded by well-known commercial houses in Mexico city. One house, it was reported, had under consideration the investment of half a million dollars in new machinery and appliances. The same journal adds: 'There is no doubt that the textile industry in Mexico is gradually acquiring a prominent position among the industries of the country, and the time is arriving when it may truly be worthy of the protection which has been so largely afforded it for many years past by the Customs tariff of the Republic.'"

The investment of half-a-million dollars referred to by the *Economista Mexicano* is probably the outcome of negotiations which have been proceeding for the past two years, but which, up to last September, the efforts of import merchants and bankers had been unable to bring to any definite termination. The rumour of large expenditure on new textile machinery has been many times circulated by the Mexican papers, but the intending subscribers had, up to last autumn, refrained from actually underwriting the amount, although every inducement had been offered them by machinery manufacturers. Should it, however, now be actually true, and the capital actually subscribed, it will be very advantageous for English trade, as the orders will, most probably, be placed with one or other of the large Lancashire machinists. Nor need we fear the competition in textiles, at all events for some years to come, since the importing of machinery is an easy matter in comparison to the training of workmen. Neither in design, nor workmanship, nor dyeing has native labour hitherto been able to successfully compete with our country, nor is it likely to do so unless our own advance in skill is far slower in the future than in the past. We stand far and away beyond the Mexicans in the finer goods, the only goods which, under their present prohibitive tariff, they chiefly import; and I cannot imagine that the capital, the intelligence, the inventiveness, which has gained us this pre-eminence in their market, will fail to secure its continuance; and every advance in native industry, every increase in the wage-earning power of the population, will tend to promote demand for greater comforts than they at present possess, and as many of these cannot be supplied from their own resources, to increase the stream of imports. Under the settled government of the last few years trade has increased rapidly, not only internally but externally. Under the inducements offered to foreign capitalists, mining enterprises have extended, and mines which were once unprofitable have, with improved communication and modern machinery, become lucrative; and the agriculture of the country has certainly been progressive, although the requirements of irrigation are yet far from being adequately met. If such improvements in the condition of the country continue—if revolutions on the one hand, and an excessive influx of foreign capital on the other, do not create panic—the legitimate trader, who wisely as well as vigorously seeks this market, will for many years yet to come reap very good results for his labours; but if he be wise he will steadily adhere to legitimate trading, and eschew the temptation of larger profits offered him in land schemes, mortgages, mining ventures, and all those other abominations by which the unwary are gulled under the generic name of investments. And if only I may induce some of our Manchester merchants, or some of our manufacturers, to more deeply consider the conditions of the Mexican and other markets, and the means by which our hold on them can be retained—if I induce them to consider that prejudices must be respected, and slothful habits reckoned upon, and that circulars, and advertisements, and even cablegrams and briskful travellers, are impotent before the great goddess Mañana—I shall have served some good purpose by my paper, and deservedly earned gratitude of which I shall never hear.

PEEL'S HOUSE, BURY.

THE CHILDREN'S HOME ON THE MOORS AT EDGWORTH.

[An Address by Mr. A. W. MAGER to the Members on their Visit, Saturday, June 13th, 1891.]

Mr. Mager said : Nineteen years ago this little colony began its work here. When the first party of rough lads took possession of the old Wheatsheaf Inn, and peered through its small broken windows upon a scene of desolation, wild and weird, there were no trees then, no habitations, no children, and almost the only birds were grouse, snipe, and plover.

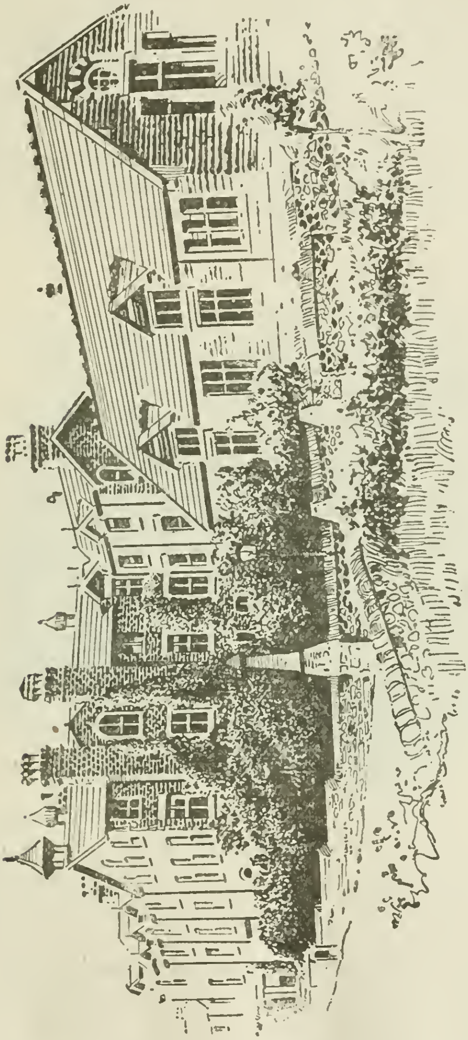
Christianity is always the pioneer of civilisation. The pillar, dug from our quarry, on the hill-top, inscribed "Soli Deo Gloria," was set up by the late Dr. Punshon in 1873. It "commemorates the dedication of this estate to the nurture and training of orphan and destitute children." The distinguished orator began his speech upon that memorable occasion by an allusion to the desolation around him. He said we were commencing our Christian enterprise away from the busy haunts of men, and, it seemed to him, beyond the pale of civilisation. But now, the fruitful fields, the productive gardens, the comely dwellings for the young, the schoolhouse for their education, the hospital for the sick and weakly, the useful farm and industrial buildings, the whole of this material development represents civilisation that is merciful, expedient, and remunerative. And it represents, besides, a moral revolution ; the purification of life ; the ennobling of character ; the practical inculcation and exemplification of Christian principle and purpose. The changed landscape has an unknown beauty, and an enhanced value of hundreds and perhaps thousands sterling ; but who can assess the value of the changed lives of those rescued and reclaimed youths who, with pick, crowbar, shovel, spade, plough and harrow, have transformed the barren moorland into a thriving colony, with the important adjuncts and appliances for its educational and Christian work.

When children are received here we generally place them in the hospital and prepare them for the cold of these uplands, and then as they are physically fit we draft them into the homes. The result is that we have very little sickness. I am glad to say the hospital is to-day not occupied by any patients.

The work of the schools is done, of course, in classes and sections. An elementary education, according to the Government Code, is given in the well-appointed schoolhouse yonder. Indoors we have our Sloyd class. The Swedish Sloyd system is adapted to train both eyes and hands in the use of tools of various kinds, and to impart intelligence and some degree of technical knowledge. In other words, its object is to utilise the educative force which lies in rightly-directed labour of any kind, as a means of developing in the pupils physical and mental powers which will be a sure and evident gain to them in after life. Woodwork with joiners' tools, plus a simple knife for beginners, is, perhaps, best fitted for boys. The making of cardboard boxes and various other useful articles of the same material, by Sloyd methods, is more interesting and suitable as an occupation for girls. The chief principles of Sloyd are right methods, attention to details, satisfactory results ; and these principles may well be applied to all kinds of work, whether of the family, the factory, or the farm. It is a kind of advanced kindergarten, to develop manual skill ; to accustom the eye to nice adjustments of size and shape ; to cultivate in its pupils the faculty of order and sequence ; to induce the love of work, the habit of painstaking in regard to details, and "that keen sense which is love of perfectness." The system is interesting to the young. It gives them pleasure in work intelligently performed with its superlative results. It would impart the artist's aim and spirit to mere artisans, and even to those engaged in the trivial round and common task. Old Antonio Stradivari's high-toned vindication of his motives and methods suggests the kind of teaching which should inspire every true craftsman :—

> "My work is mine ;
> And heresy or not, if my hand slacked
> I should rob God—since He is fullest good—
> Leaving a blank instead of Violins.
> I say, not God Himself can make man's best
> Without best men to help Him. I am one best
> Here in Cremona, using sunlight well
> To fashion finest maple till it serves
> More cunningly than throats for harmony.
> 'Tis rare delight ; I would not change my skill
> To be the Emperor with bungling hands,
> And lose my Work, which comes as natural
> As self at waking."

With this lofty ideal of work let us now visit the Sloyd Class, and watch for a short time the youthful students engaged in producing a perfect article, according to pattern, out of a few inches of rough birch or deal. The room — the original schoolroom of the Institution — is well lighted with six large windows, giving a grand outlook over many miles of hill and dale. It is arranged with benches from end to end, and furnished with complete sets of joiners' tools—effective but not costly. A Swedish lathe and grindstone also form part of the equipment of this training school. There are two pupils—boys or girls—at each bench. The exercises are systematically graduated, the course including the making of twenty-five articles in the numerical order stated upon the card hung conspicuously in the room. Models are also exhibited and examined. Diagrams, showing the shape, size, and section of each model, are given to the pupil. The object is further explained and set out in chalk upon a blackboard by the able teacher—Mr. Frederick Wilkinson, of Bolton. He also shows how to handle and apply the tools—and how *not* to use them—in the shaping of each article. Marks are bestowed for excellence ; careless work is cast away, and a fresh start upon a second, third, or fourth piece of rough wood is one of the penalties of inattention. See how intent the workers are. How interested they become in the small piece of wood each is so carefully reducing to the required size and shape. How often square and measure are applied to test the work as it goes on. There are several failures in the room, more in the earlier and simpler exercises. The knife was too sharp and slipped (the tools are so often at fault), or the wood had a knot or twist in its grain which prevented its successful shaping. The condemned article is put aside amongst other failures, and another piece of wood is given upon which the prentice hand may once more painfully endeavour to realise an ideal perfection in the production of a flower stick, an envelope opener, a pen rest, or a parcel holder. "Almost valueless articles these," some one may say ; "they may be made much quicker, if not better, by machinery, and bought at a shop for a few pence per dozen. The game is hardly worth the candle." "Perhaps not," we should reply, "if the material results only are considered. The boy's or girl's copy book, filled with badly-formed letters and imperfect writing, is, after all the pains bestowed upon it, but so much waste paper. The careful copyist, however, is acquiring skill by the exercise, and is being qualified thereby for the duties of life. So with this Sloyd system ; its material results are of small utility ; but its principles and methods are indispensable in all true work, and its educational advantages in the moral, mental, and manual development of its pupils are valuable beyond appraisement. Anything that goes to form character, to make the youths of our land capable and conscientious craftsmen, is inestimable in its far-reaching benefits to the subjects of such training and to the nation for all time.



CENTRAL BLOCK OF BUILDINGS, EDGWORTH.

Industrial Training is given to girls and boys in the fine range of workshops and model diary, built by public subscription in 1889, as a memorial of the late Mr. James Barlow, J.P., the generous donor of the estate. The industrial departments are intended to give technical training; to impart intelligence; and to promote manual skill. The majority of our children are endowed with no more than the one talent—the hand.

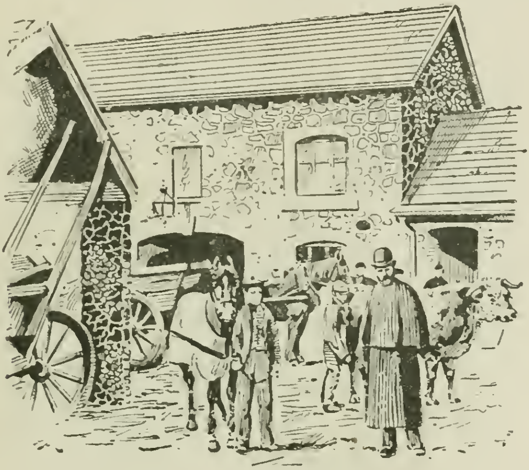
It is incumbent upon us, therefore, to see that this talent is so improved as to fit the children for the duties of life, and to make them self-reliant and as capable as possible. They must "work with their hands the thing which is good," to provide for themselves and others in the future. Domestic service requires an amount of manual skill as well as knowledge of household methods and management. Domestic economy is taught in our Board Schools ; it is practised in our Homes. The duties of the "family system" intelligently performed fit our girls for their future calling, and give them the means and opportunity of learning to cook, bake, scrub, wash, sew, wait at table, &c. Art, knowledge, skill, are needful factors even in the discharge of these domestic tasks. To peel a potato properly and without waste is an accomplishment that few girls naturally excel in. The "Sloyd" methods and principles before referred to may well be applied to such common matters of the household. Our object in the Home is not only to make the best of the potato, but the best of its peeler, so that she may become skilful and thrifty in that and in the hundred things of which that simple operation is but an example.

THE KNITTING-ROOM, EDGWORTH.

But not all the girls of the Home are fitted for domestic service ; or in some cases there is an aptitude or need for other kinds of employment. Hence we have industries, trades, and handicrafts, as departments of our training work, for fitting girls and boys for the future before them.

In the Knitting Industry girls have been taught to make hosiery and garments ; and now certain of them, having left the Home, are able by this handicraft to support in comfort and respectability themselves, their widow-mother and her younger children. It is a handicraft beneficial to the girls employed in it, and remunerative to the Institution. Indeed, the test and proof of its efficiency as a means of training for the future is that it is made remunerative. Poor work would never pay the producer, nor qualify the workers. The articles made in our Knitting Shop are not inferior. Customers near and far approve them, recommend them, come to us again and again for hosiery of all kinds; pretty costumes for little children; neat jerseys and jackets for girls and boys of larger growth; and for warm elastic woollen undergarments, to ward off rheumatism from those yet more advanced in life. All such articles of clothing are made and finished by our girls and their instructors in the commodious knitting-room — one of the Barlow Memorial Industrial Block—at Edgworth.

I now go to OUR MODEL DAIRY AND ITS METHODS. Technical knowledge and skill of a different order are required in the Dairying operations of our important Farm Branch with its 100 acres of reclaimed moorland; by boys' labour—delving, draining, liming—this sterile soil has been made into verdant meadows and productive gardens. Yes; and the hard work has been fruitful in other than material and pecuniary results. Character has been reclaimed as well as fields. Men—honest industrious, and resourceful—besides meadows, have been made by the same course of beneficent toil. The boys milk the cows, tend the cattle and horses, and do the daily routine work of the farm.

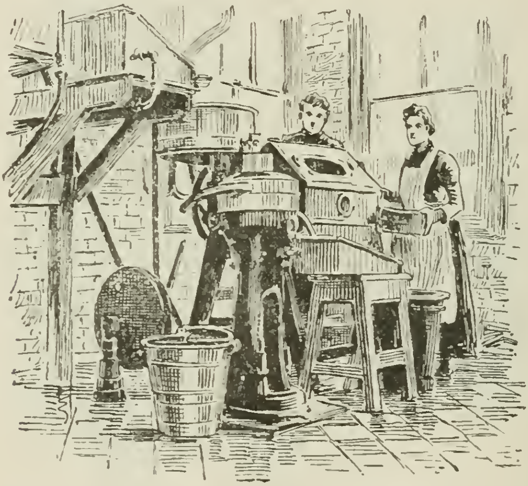


IN THE FARMYARD, EDGWORTH.

The produce of thirty to forty head of cattle in milk and cream has to be dealt with in this admirable Model Dairy and Creamery. The importance of right methods, of proper appliances, and satisfactory results in dairy work is now recognised by the Agricultural Department of the Government. Upwards of fifteen millions sterling per annum are being paid for dairy produce to foreigners. State-aided Dairy Institutes, and travelling Dairy Schools with certified teachers, are now established and set going by the Board of Agriculture and by County Councils in different parts of the country, for teaching farmers' wives and daughters, and dairymaids and dairymen, the most perfect methods of butter-making, &c. Old methods are condemned as insanitary and unscientific; and the tons of British butter sent into the markets, of poor "texture" and worse taste, testify to the need of reform in this important national industry.

Let us conduct our readers to the Dairy. It is approached from the Knitting

Exhibit by a corridor. To the left is the Conservatory, where flowers and ferns are cultivated for sale to visitors. A glass partition on the right reveals the Dairy and its burnished appliances for cream separation, &c. The floral display on the other side of the corridor adds to the attractiveness of the Dairy, but care has been taken in the arrangement of doors, &c., to allow of no perfume from the plants entering the chambers devoted to such delicate commodities as milk, cream, and butter. The floors, though well washed after churning, &c., are kept dry; for it is proved that germs and microbes multiply in a damp atmosphere. Every crevice and corner is kept scrupulously clean; channels for waste water are carried outside the building to the drains, with which there is no connection. Ventilation is well provided for. The walls are of white enamelled bricks; windows are double to modify temperature in summer and winter; and hot water pipes, regulated with several valves, are provided for the same purpose. Thermometers hang conspicuously around. There are two chief requisites of good butter-making, viz.: (1) absolute cleanliness; (2) attention to temperature.



WASHING THE BUTTER GRANULES.

CREAM SEPARATION.—The cream is extracted from the milk immediately it is taken from the cows; there is therefore no exposure of the sweet milk in shallow pans to allow the cream to rise; for at the same time germs and molecules in the atmosphere around (which have a remarkable affinity for milk) would fly to it and render it sour and impure. The Separator—called the "Victoria"—is driven by an Otto Gas Engine from a closed chamber behind. Upwards of 7,000 revolutions per minute (double the number of revolutions of the wheels of an express train) are given to the steel drums into which the milk runs, and by this centrifugal motion the cream—thin for churning, "double thick" for sale—is by nice adjustment thrown off.

The cream, in its course from the Separator, is at once cooled to 58°, and is then set aside for a few hours to "ripen" before it is churned. It must be watched; and the temperature around it should also be kept at about 58°, to prevent over fermentation. The exact degree of ripeness required can be judged by an expert dairymaid. Her intelligence, skill, and attention are required from beginning to end in the adjustment of the machinery and appliances, and in the treatment of milk, cream, and butter. Rule of thumb or haphazard methods would result in failure and disappointment.

The churning of the cream, by one of Bradford's noted Diaphragm Churns, requires no less intelligence and care. Absolute cleanliness, and a temperature not higher than 60 degrees, are again the essentials. 45 revolutions per minute are given to the churn, and in about 40 minutes (unless the cream is too cold or it goes to "sleep"), the butter granules are seen upon the glass disc. The operator stops the churn at once, draws off the butter-milk, pours in pure cold water to harden the granules, and to wash out every trace of casein and butter-milk. This is the critical point in the making of good butter that will keep sweet, without salt, for any reasonable length of time; and this washing out the butter-milk and casein whilst the butter is in the granular state, marks one chief difference between the old methods and the new. If the granules be "gathered," as old dairy hands term it—*i.e.*, beaten into a mass—no subsequent washing or pressing can remove the element of decomposition that is in the butter-milk enclosed in the mass of butter; hence it is of the utmost importance that the operator, by the exercise of the organs of sight and sound, ascertains the critical moment when to stop the churn, and to cleanse and harden, by the application of cold spring water, the delicate particles of butter that the churning process has "broken" from the cream.

The operator now introduces brine into the churn (dry salt makes inferior butter); she allows it to remain 15 minutes, then takes out the granules with a well-scalded wooden shovel, and places them to drain before she works them. How dainty they look heaped up on the white table, and how appetising is the aroma arising from them! All moisture must now be pressed out with the fluted roller, carefully used, and the granules, unbroken, must be consolidated to a mass.

The weighing and making-up into attractive patterns, without crushing in moulds, are now deftly done with fluted "Scotch hands." Throughout there is no touch of human hand, nor contact of any kind, to mar the delicate flavour of this most susceptible article. A few hours in a dark, cold, well-ventilated "buttery" add to its colour, firmness, and sweet nutty flavour. It is then carefully packed in odourless boxes, and sent off by rail, parcel post, or messengers to appreciative customers in various parts of the country.

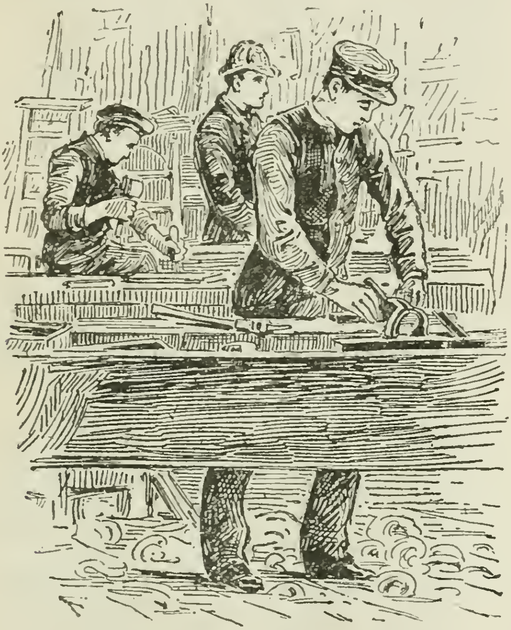
QUARRYING.—The estate of the Edgworth Home is rich in stone. Upon the steep hill top—"Crownthorne" yonder—the rock has been revealed and riven, and with hammers, wedges, picks and crowbars, blocks of it have been reduced to the requisite size and shape for all those buildings which form the extensive colony of The Children's Home below. These quarrying operations have afforded a fine sphere of industry for the elder boys of the community. Those houses, cottages, and blocks of buildings; that fine dining-hall, that comely school, that extensive range of farm premises, represent twenty years of hard beneficial labour, by successive groups and generations of stalwart youth—feeble and flabby, morally and physically, as they were before their translation from the squalid streets to these breezy moorlands. With pride that, we trust, may be pardoned, we venture to apply to these boys and their part in the work of development the well-known inscription, "If you want a monument, look around." Those ranges of buildings; the material development and improvement on every hand; the oasis of sweet meadows, with their trim stone fences, in a desert of barren moorland around, represent youthful labour that would have been wasted, energies destructive and baneful. They represent also a moral transformation no less satisfactory than the material improvement visible upon the estate. Character, rectified and ennobled, is the most valuable product of so much rough work with spade and pick, crowbar and crane. Inherited indolence is the bane of boys of a certain type;

the antidote is to be found and is applied at our Crowthorne quarry. Stones are heavy, difficult to get, hard to cut, and harder to move. Put two or three lazy lads—loungers by birth and habit—at the handles of a powerful crane, and attach a two-ton block of stone to the end of its chain ; then set them winding the ponderous piece of rock from its deep bed to the bank above, and the workers will find they cannot shirk their task. The winding process is slow and arduous ; all the better for that. The original "curse" of labour is beneficent ; the sweat of brow earns bread ; and besides, in the case of the raw human material before us, it develops muscle and begets mettle, and effects a moral as well as a physical transformation that is as satisfactory as it is surprising. No work like stone-getting for the cure of laziness.

THE QUARRY AT EDGWORTH.

The operations at our quarry require and impart considerable knowledge and skill as well as bodily strength. Of each stone brought out from its bed below, the best has to be made. "Flag-rock" must be squared, "nicked," cut, punched, and smoothed for pavements. Large blocks must be wedged apart to form window and door heads and sills. The smaller pieces are cut into wall-stones and "sets" for road-making, &c. There is an interesting variety in the work, beginning with the removal of the soil and shale ; baring the rock, forcing it from its bed with wedges, powerful crowbars, and picks ; then winding the blocks to the surface to be cut and roughly shaped to dimensions, for masons and builders. Much of these toilsome operations is accomplished by the boys of the Home ; the more skilful work is, of course, done by experienced quarrymen, because, as the youthful workers become capable and strong, they go from us to earn their own living, making room for others who need, as they once needed, such effective industrial training.

We set great value upon our quarry at Edgworth, not only for its ample store of sandgrit stone with which to build homes for bereaved and destitute children, but because the work done in it is healthful and educative, developing stamina and skill, besides love of labour ; labour whose permanent results may be appreciated in the years and even in centuries to come.



YOUNG CARPENTERS.

Then there are shops at London and Edgworth for joiners and carpenters, painters, glaziers, smiths, and mechanics. The youths engaged in these trades and occupations make, for use of the Home, tables, forms, stools, boxes, desks, &c. They repair, paint, and preserve the premises, plant, and furniture ; they asphalte paths and playgrounds, fitting themselves at the same time by all these operations, requiring skill, technical knowledge, and intelligence, for the future before them.

Lancashire is noted amongst many other good things for its clogs. At Edgworth our boys and girls wear clogs, not only for the sake of economy, but to keep their feet dry and warm in this changeable climate.

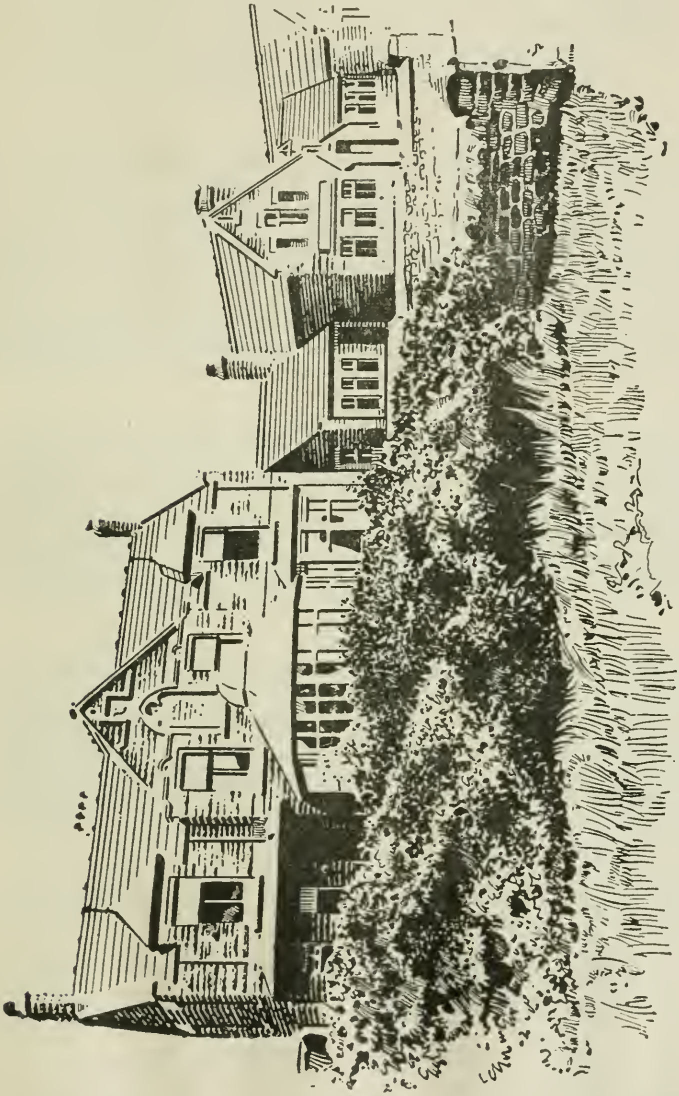
The Cloggers' and Bootmakers' Shop is most useful to our community, but besides, it affords the means of giving a remunerative trade to certain crippled or infirm lads who might otherwise be disqualified for the more laborious occupations in which most of our boys have to earn their livelihood.

GIRLS IN CLOGS AND HOODS AT EDGWORTH.

The several industries, trades, and handicrafts herein described are remunerative and beneficial. They enable the Home to extend its good work for bereaved and destitute or neglected and outcast children. Besides, they are made the means of education and training, practical and efficient, qualifying the girls and boys engaged in them for good service in life, and they also enable us to enforce the Scriptural injunction—"Whatsoever thy hand findeth to do, do it with thy might."

A CLOGGER.

At Edgworth there are the following homes:—Boys' Homes: Wheatsheaf House Bolton House, Moscrop House, Woodville, Jubilee House, Howarth Memoria House. Girls' Homes: Ministers' Children's Gift House, Sanderson-Mitchell House. Davies' Memorial Hospital, The Atkinson Hall, School-Chapel, S. Australian House.



BARLOW MEMORIAL MODEL DAIRY AND INDUSTRIAL BUILDINGS, EDGWORTH.

Several of the above have been built and given as memorials and thank-offerings. Christian philanthropists should know that there is room—and pressing need, too—for many such wise and enduring benefactions.

PROCEEDINGS OF THE SOCIETY.

APRIL 1st TO JUNE 30th, 1891.

The 156th Meeting of the Society, held in the Memorial Hall, Thursday, April 2nd, 1891, at 7-30 p.m. Mr. **Job Irlam** in the chair.

Mr. C. E. **Schwann**, M.P., addressed the members "On Impressions of his Recent Journey Through India." The address was illustrated with maps, photographs, and lantern views. Mr. F. Schwabe lent some slides, and a number of Mr. Schwann's photographs were shown.

Several questions were asked and replied to, and a very hearty vote of thanks, on the motion of the **Chairman**, seconded by Mr. J. **Thewlis Johnson**, was given to Mr. Schwann for his interesting address, and to Mr. Schwabe for the loan of his slides.

The 157th Meeting of the Society, held (in conjunction with the Manchester Athenæum) in the large room of the Athenæum, on Tuesday, April 7th, 1891, at 7-30 p.m.

Mr. **Herbert Ward** addressed the meeting on "Five Years Among the Congo Cannibals.," illustrating his address with a fine series of lantern slides from views and photographs taken by himself on the river. The address was of great interest.

The 158th Meeting of the Society, held in the Arts and Crafts Exhibition, City Art Gallery, on Saturday, April 11th, 1891, at 2 p.m.

In the unavoidable absence of Mr. W. Stanfield, his Assistant received the members and conducted them through the Exhibition, explaining its object and giving a variety of information as to the exhibits. The members were very much pleased with the Exhibition, and a hearty vote of thanks was passed to the Assistant for his courteous services.

The 159th meeting of the Society, held in the Library, Tuesday, April 14th, 1891, at 7-30 p.m. Mr. **Wm. Johnson** in the chair.

The minutes of the following meetings were read and approved: Feb. 25 (150), 27 (151), March 4 (152), 13 (153), 20 (154), 24 (155), April 2 (156), 7 (157), 11 (158).

Additions to the Library having been announced, the election of the following members was declared:—

Ordinary: Major Ballantine, Messrs. J. J. Gleave, J. Murray Moore, M.D., W. H. Pierce, and R. H. Watt.

Associates: Miss J. C. Anderson, Messrs. Richard Greenough, F. le Mare, and James Ward.

The following papers were read: ' Th Journey of M. Bonvalot and Prince Henry of Orleans Across Thibet," by Mr. Mark Stirrup, F.G.S. (see page 63). "On the

Comparative Value of African Lands," by Mr. A. Silva White, F.R.S.E. "Boulder Outline Figures in the Dakotas," by Mr. T. H. Lewis. "Ethnology of Etrusca, Sardinia, and Sicily," by Prof. F. Borsari. "The Ruby Mines and Oil Industry of Burmah."

Messrs. T. Gregory, F.C.A., and W. Aldred, F.C.A., were re-elected auditors of the Society.

The meeting passed very cordial votes of thanks to the writers of the papers.

The question of excursions having been discussed and considered, the Secretary was requested to make recommendations to the Council.

The 160th Meeting of the Society, held in the Memorial Hall, Wednesday, May 6th, 1891, at 7-30 p.m. The Rev. S. A. STEINTHAL in the chair.

Professor MINASSE TCHÉRAZ, Professor of Armenian at King's College, London, addressed the members on "The Armenians: their Country, Race, History, Religion, Language, and Literature" (see page 84). The address was illustrated with maps and photographs, and was listened to with great interest.

The CHAIRMAN moved, Mr. B. J. BELISHA seconded, and the SECRETARY supported a very hearty vote of thanks to the Professor, to which he responded.

The 161st Meeting of the Society, held in the Manchester Athenæum, on Friday, May 29th, 1891, at 7-30 p.m. The Rev. S. A. STEINTHAL in the chair.

Professor ARMINIUS VAMBÉRY, of Budapest, addressed the members "On British Trade in Central Asia" (see page 87). The address was illustrated with maps.

The CHAIRMAN moved, and Mr. HILTON GREAVES, J.P., seconded, a hearty vote of thanks to Professor Vambéry for his instructive address, which was carried with acclamation. Thanks to the Chairman closed a most interesting meeting.

The 162nd Meeting of the Society, held at the Deaf and Dumb Institution, Old Trafford, on Saturday, May 30th, 1891, at 3 p.m.

Mr. W. S. Bessant, the governor (upon whose invitation the visit was made), conducted the party through the building and explained the different features. The members were shown sloyd-work and fret-work done by the children, and the method of oral instruction by lip and sign teaching. In the gymnasium a number of the boys and girls went through their exercises in a very creditable manner.

At a meeting held under the presidency of Mr. Councillor Smallman, Mr. RICHARD WADE moved that the thanks of the Society be tendered to Mr. Bessant, his assistants, and the children for the very interesting afternoon they had enabled the members to spend, and expressed heartfelt sympathy with the institution in its benevolent and evidently successful work. Mr. LESLIE seconded the motion, which was carried. At the termination of the proceedings, Mr. Bessant asked the boys to give the visitors three cheers, and they responded with an intelligible "Hip, hip, hurrah."

The 163rd Meeting of the Society, held at the Chamber of Commerce, on Friday, June 5th, 1891, at 3 p.m. Mr. F. ZIMMERN in the chair.

Mr. ALVAN MILLSON, M.A., of Lagos, addressed the members "On Yoruba Cotton Growing and the Industrial and Commercial Features of that part of the Lagos colony" (see page 92). The address was illustrated with a large map and a collection of native cloths. Questions were asked by Col. Mellor, Mr. Dentith, Mr. Blackstock, and others, on the subject of the address, to which Mr. Millson very fully replied.

Mr. E. Helm proposed, and Col. Mellor seconded, a most hearty vote of thanks to Mr. Millson for his address, which was not only very interesting but of great commercial value. Mr. Millson having responded, thanks to the Chairman closed the meeting.

The 164th Meeting of the Society, at the Farm Back-o'th'-Moss, Unsworth, on Saturday, June 6th, 1891, at 2-30 p.m.

The members were received by Mr. Daniel Fletcher and his family, who gave them information as to the reclamation of the moss lands, the folk-lore, geology, and geography of the district, and pointed out the brooks, hills, villages, and manufacturing centres. After tea, Mr. Barlow, of Radcliffe, in the chair, very hearty thanks were given to Mr. Fletcher and his family for their kindness, and for their gracious reception of so large a number of members of the Society.

The 165th Meeting of the Society, held at the Stockport Technical School, on Wednesday, June 10th, 1891, at 7 p.m.

The members met at the Corporation Baths, Petersgate, and were received by Mr. Councillor Wood and the Borough Engineer, who showed them over these most complete and beautiful municipal buildings. They then inspected the new Lads' Club and the Stockport Sunday Schools, and were received at the new Technical Schools by the Secretary, who described the building and the work of the school.

After tea a meeting was held in the Art School, presided over by His Worship the Mayor of Stockport, which was addressed by the Rev. S. A. Steinthal and the Secretary, on the object and work of the Manchester Geographical Society.

Thanks to the speakers were proposed by the Rev. Canon Symonds, seconded, and carried.

Mr. Steinthal responded, and moved a vote of thanks to Mr. Wood, the Borough Engineer, to the committee and secretary of the Technical School, and to His Worship the Mayor for presiding.

Mr. Chivers seconded the resolution, which was carried and responded to.

The 166th Meeting of the Society, held at the Children's Home, Edgworth, on Saturday, June 13th, 1891, at 5 p.m.

The way from the Edgworth or Turton Station, past the Bolton reservoirs and through stone quarries, gradually rising up to the moorlands on which the settlement is found, is interesting, and is a good sample of the sombre Lancashire moorland country.

Having had several journeys to parts of the country in line with Edgworth, and connecting with another journey to Rivington, the members were prepared to enter into the pleasure of a visit to this historical district, and to admire the hilly views.

On reaching the Homes, the members were received by the governor, Mr. A. W. Mager, who collected some of the children and allowed them to sing several pieces of music, and afterwards the members were taken through the workshops, dairy, farm-buildings, the hospital, baths, and other parts of this very interesting settlement. Mr. Mager gave a short address, giving a history of the settlement, and he has kindly lent the Society the blocks to illustrate the account of the work of the institution so far as Edgworth is concerned.

The other parts of the work, in London and elsewhere, were only referred to and not dealt with in detail. (See pp. 137.)

After tea, Mr. J. BARLOW, of Radcliffe, in the chair, samples of the dairy produce and the hosiery having been purchased, very hearty thanks were given to Mr. Mager and his assistants, and the pleasure of the members expressed to see the children free, healthy, and happy, and without any of the appearance of institutionalism about them, and hope was expressed that the schools might abundantly prosper.

Mr. MAGER responded, and thanks to the Chairman closed the meeting, the members having a delightful walk on their return to the Edgworth Station.

The 167th Meeting of the Society, held at Rivington, on Saturday, June 20th, 1891, at 5 p.m. Mrs. BOSDIN LEECH, a member of the Council, in the chair.

The members were received at Horwich by the Rev. S. Thompson and his son, and were conducted through Mr. Chorlton's gardens and on to the waterworks of the Liverpool Corporation, the reservoirs and filtering beds being of great interest to the engineers in the party. Then a walk through the fields brought them to the village of Rivington.

After tea the village, the quaint, old chapel, and the manse gardens were inspected, and the Rev. S. THOMPSON gave an interesting address on the district, geographically, industrially, and historically, and gave the following account of the quaint, old ivy-covered Rivington Presbyterian Chapel :—

This is one of the most quaint and interesting chapels in the district of Bolton. It was built in 1703 by the Nonconformists of the township, who must have been a majority in the congregation of the church, seeing that they worshipped in it almost up to the time of the erection of a building for themselves.

Rivington Chapel stands at a distance of little more than 100 yards from the Church, a little way back from the road leading from Horwich to Chorley, its western gable facing the road leading to the Pike and Bolton. It is nearly surrounded by a graveyard, which, in the summer season, looks like that so well pourtrayed by Gray in his famous "Elegy." Two doorways, reached by ascending three large semicircular stone steps, lead to the interior, which is furnished with the original square-shaped oaken pews, in various degrees of preservation. The windows are mullioned, the panes diamond-shaped, and altogether there is an appearance of charming simplicity in its construction. The pulpit stands high above the level of the floor, while underneath and in front is the desk of the precentor, whose occupation has been gone for many years, though there are still those who remember the singing being led by him, accompanied by a choir of musicians with stringed instruments. To assist the congregation, cards, with the names of the tunes to be sung, were conspicuously placed upon each side, and in front of the pulpit—even yet a well-known custom in Presbyterian Scotland. There are several mural tablets, one in particular being in memory of the Right Honourable Hugh Lord Willoughby, of Parham, F.R.S., who died in 1765, and whose large canopied pew is directly in front of the pulpit. Close by the western door there is another memorial, which is very interesting. It is a stone about a foot square, enclosed in a wooden frame. About fifty years ago some workmen were pulling down a wall to be broken for mending the highway, and amongst the stones was one that had been placed in the wall as a memorial of an event of more than local interest. Unfortunately it received a blow before it was seen to have writing upon it, but the pieces being put together it was found to have the following inscription : "Y^{e} Revd. Samuele Newtone, driven from y^{e} church on Bartholomew Sonday 1662." The characters are quite ancient and rudely cut, and it is undoubtedly a genuine memorial of an event in English history that produced quite another effect than was anticipated by the party in power when it ejected 2,000 clergymen from the Church of England.

The Rev. Samuel Newton returned to his old charge, and he died in 1682, his remains, with those of his wife, being buried in the chancel of the church.

Probably a Mr. Walker was the first minister in Rivington Chapel. From 1704 the line of ministry is certain, though in some cases not much is known.

Lovers of freedom, the Nonconformists, were loyal to the Throne, and we find some of the ministers of the district giving valuable assistance during the Scotch Rebellion of 1715.

In "Wood's Memoirs" we read that "the Rev. John Turner, at that time Protestant Dissenting Minister there (Preston), was, upon the breaking out of the first rebellion, eminently serviceable to the cause of the reigning family. Firmly attached to the principles of the Revolution, and the succession of the Crown in the House of Hanover, he left his wife and infant child, and, with many of the younger part of his congregation, joined the army under General Willes, by whom they were, with great propriety, on account of their knowledge of the country, employed as scouts to obtain information and to observe the motions of the rebels. In one of those nocturnal excursions Mr. Turner had the good fortune to fall in with, and, being of strong athletic constitution, to take prisoner and bring back safe with him to the camp a confidential servant of one of the principal Roman Catholic gentry, who was going from his master with some important intelligence to the rebels. For this service he had the public thanks of General Willes." Mr. Turner settled in Rivington in 1716, the year after the rebellion.

In Dr. Evans' list of Presbyterian and Independent Chapels, Rivington Chapel is said to have accommodation for 329 persons.

In the trust deed there is no specific theology inserted as requisite. "The worship of Almighty God" is declared to be that for which the chapel was built.

The members then divided into two companies, one party being led through Dean Clough to Horwich, and the other ascending the Pike and having a view of an extensive moorland country, the wide reach of the Rivington reservoirs, and the country towards the sea.

Mr. Irlam moved that the thanks of the members be tendered to the Rev. S. Thompson and his son, to Mr. Chorlton of the waterworks, to the proprietor of Dean Wood for permission to go through it, and to the lord of the manor for permission to cross the moors. The motion being seconded and carried, thanks to Mrs. Leech closed a very enjoyable excursion.

The 168th Meeting of the Society, held in the Barton Chapel Schoolroom, on Saturday, June 27th, 1891, at 6 p.m. Mr. Wm. Aldred, F.C.A., in the chair.

The members were received at Mode Wheel by Mr. J. J. Warbrick and one of his assistant engineers, and were conducted along the Ship Canal works, past the Mode Wheel locks, to Stickens Island. The deviations in the river, the locks and sluice-gates, the lifts at Barton for boats out of and into the Bridgewater and Ship Canals, and the new arrangements for an aqueduct and viaduct in place of Brindley's celebrated water-bridge and the old roadway, were inspected with keen interest, the conductors giving explanations of the work in progress and as it would be when finished, and replying to numerous inquiries during the journey with much courtesy.

Tea was had, by permission of the Rev. J. Thackeray, in the Barton School.

The very hearty thanks of the members were tendered to Mr. Leader Williams, Mr. Warbrick and his assistant, to Mr. Thackeray and Mr. Tuthill for their kindness to the members on this very interesting visit to the works of the Canal.

Mr. Donald, Mr. Stott, Mr. Field (a visitor), Mr. Holt, and Mr. Cowell spoke on the resolution. Thanks to the Chairman closed the meeting.

After the meeting some of the members had the opportunity of visiting the gardens of Mr. B. Armitage, J.P., Chomlea, and of seeing his very beautiful rhododendrons.

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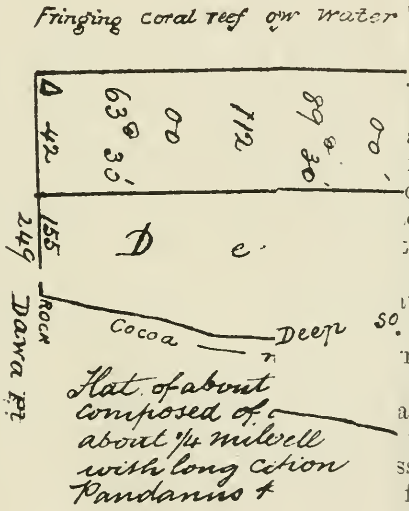

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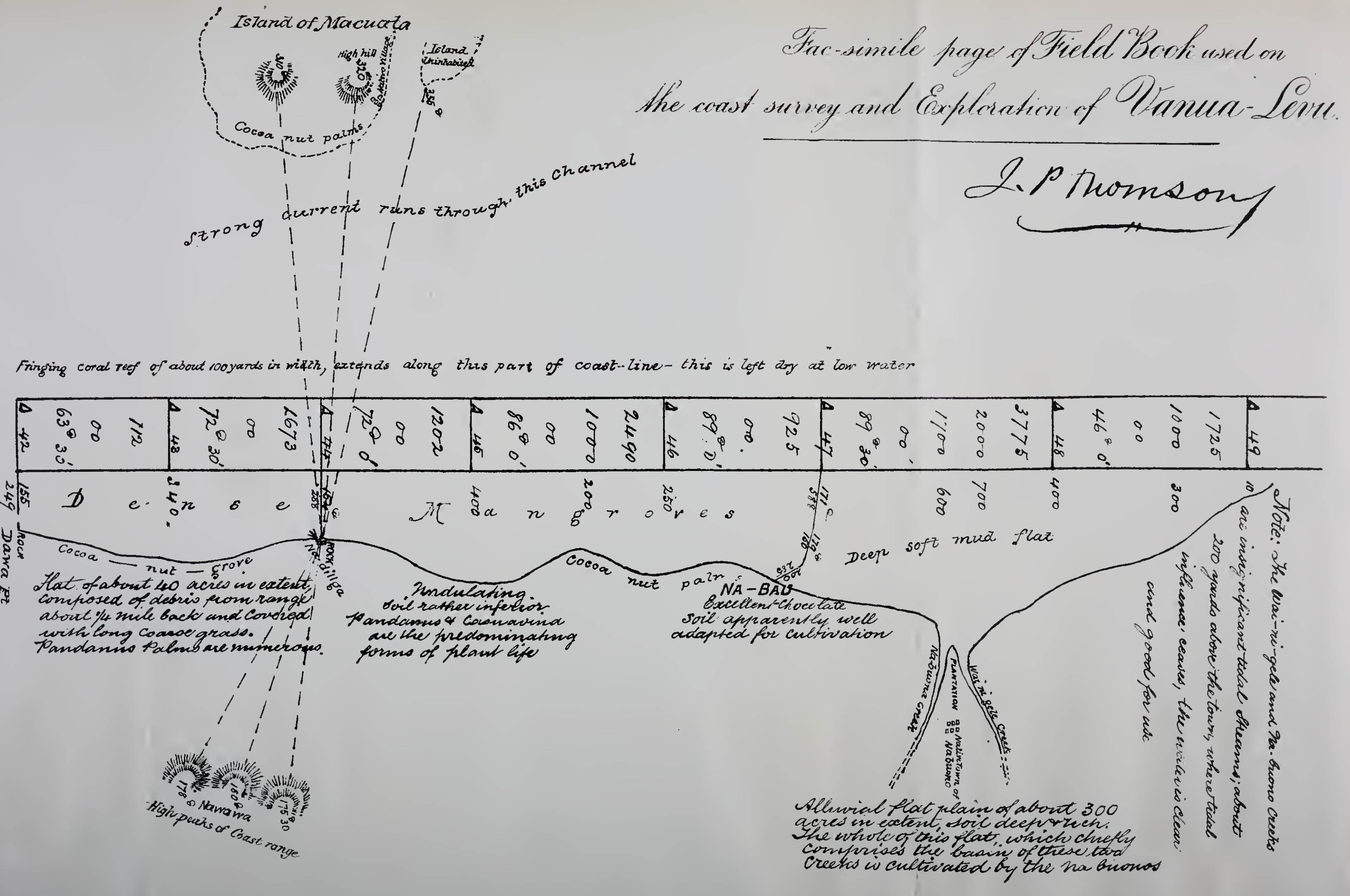
Fac-simile page of Field Book used on the coast survey and Exploration of Vanua-Levu.

J. P. Thomson



Flat of about 40 acres in extent, composed of debris from range about ¼ mile back and Covered with long coarse grass. Pandanus Palms are numerous.

Undulating. Soil rather inferior. Pandanus & Casuarina are the predominating forms of plant life

Excellent Chocolate Soil apparently well adapted for cultivation

Alluvial flat plain of about 300 acres in extent, soil deep & rich. The whole of this flat, which chiefly comprises the basin of these two Creeks is cultivated by the Na buonos

Note: The Wai-ni-gele and Na-buono Creeks are insignificant tidal streams; about 200 yards above the town, where tidal influence ceases, the water is clear and good for use

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OF THE

MANCHESTER GEOGRAPHICAL SOCIETY.

PRACTICAL SUGGESTIONS OFFERED TO TRAVELLERS.—*(See Sketch Maps.)*

By Mr. J. P. THOMSON, F.R.S.G.S., Hon. Secretary to the Royal Geographical Society of Australasia, Queensland.

[Read to the Members, in the Library, Wednesday, December 9th, 1891.]

EXPERIENCE has convinced the writer that in many instances the geographic results of what may very properly be termed costly undertakings are not, either commercially or scientifically, commensurate with the amount of capital and labour bestowed upon them. It is to the strength of this conviction that this theme owes its suggestion, and it is upon the results of prolonged professional experience that the following observations are based:—

While the existence of incongruity of results is shown by the conflicting current issues of explorations, it is chiefly by a review of the history of cartography that a proper value can be assigned to each series of observations. A retrospective view of this history points to an almost bewildering mass of irreconcilable data collated by explorers and voyagers from almost every available part of the world. These incoherences, which not infrequently engender painful and bitter controversies between individuals and parties, sometimes resulting in tedious and expensive litigation, exist chiefly in connection with positions as defined by the terms latitude, longitude, and height. Explorers should bear in mind that maps showing incorrect delineations of natural features are as dangerous to the landsman as bad chronometers are to the mariner—upon the face of both errors are imprinted, which are misleading.

Expeditiousness in the field of exploration is the preponderating feature of the age in which we live; hence it is not infrequently brought about that the far more important matter of establishing a reliable basis upon which operations are to be conducted and completed is altogether subordinated to the former. Nor does the evil here end, for hurried marches and voyages deprive other dependent branches of science of valuable aid, by leaving in obscurity that which by human intelligence should be brought to light, while the country operated upon itself suffers greatly by reports which subsequent experience is unable to verify, so that thereby, without doubt, progressive science and civilisation are retarded. It is a notorious fact that discrepancies of astonishing magnitude, which would not be tolerated in even the most lax professional practice, occur in results obtained by different observers from identical localities. Mountains are made to project from plains where, in reality, none exist ; rivers emanate from mythical sources, and meander through regions where both man and beast would die of thirst ; while lakes claim sites occupied by nothing save the arid slopes of mountains and the barren wastes of sand.

Differences, of no practical importance, however, will necessarily occur for all time, such as those arising from inequality of instrumental values, changeableness of atmospheric conditions, and the influence of physical peculiarities, common to the human organisation as exhibited in different observers ; but outside a reasonable limit assigned to these causes, no greater scope of probable error should be admissible under any conditions whatever.

None but approved instruments should be used for observations, the results of which should be computed only by standard mathematical formulæ.

Stellar or solar observations should be carefully conducted along the line of march, preferably at places possessing natural prominence, and imperatively at the mouths, sources, and union of water-courses, likewise on mountain tops and along the culminating parts of watersheds. These observations should be properly recorded on approved forms, and conducted with sufficient precision and care to guarantee determination of actual position, ± probable errors, not exceeding the standard limits aforesaid. These positions should be defined, by special marks, as fixed stations ; the compass needle of declination should also be determined and the several data position elucidated, so that, if necessary, they could at any future time be verified.

For the practical realisation of this object, which would not fail in educational influence by elevating the study of geography, uniformity of operations and a higher standard of practical proficiency should be insisted upon. Mere theoretical knowledge, unsupported by practical experience, should not be admissible, and, while adequate recognition for more than an ordinary display of energy and great physical endurance should not be withheld, the greatest distinctive rewards should only be bestowed for the most valuable results from a professional standpoint. It is the man through whose special scientific qualifications, geographical science, in the abstract sense, has been most largely enriched, that the brotherhood should love to honour; not the traveller, whose sole aim is clearly manifested by a consuming desire to climb the highest point or to cover the greatest distance within a given space of time, in either of which success may be the reward of fortitude, but neither of which may necessarily confer lasting benefits upon the race nor materially increase our knowledge of the actual geography of the region so operated upon.

Viewed as merely introductory, these foregoing remarks may now be followed by a few practical suggestions which the writer has, in ordinary professional field experience, proved to be most useful. These, if carefully acted upon, will not fail in producing satisfactory results to specially-organised expeditions for the explorations of isolated parts and to the ordinary traveller who may desire to be useful.

Where purely mathematical subjects are dealt with, it may be advantageous, especially to the inexperienced, to confine ourselves to the simplest methods by avoiding complicated formulæ, which for ordinary purposes are unnecessary.

As the felicitous issues of an expedition in a very large degree depend upon the leader, too great care in the selection of that officer cannot be enjoined. Physical fitness should be certified by actual medical test, and the professional standard by practical demonstrations and certificates of competency of indisputable value. Firmness, coolness, tenacity of purpose, and boldness should be special characteristic investitures; while essentially a thorough disciplinarian, he should also be a recognised humanitarian, a powerful organiser, and a man of unlimited resources. His moral qualities, especially, should be unimpeachable and exemplary, so that his presence, even in the midst of the most enticing surroundings, should silence emotion and engender respect and confidence. These are the fundamental bases of life's greatest successes, and in the field of exploration especially, where uncontrolled actions and free intercourse with uncivilised communities are inevitable, their presence is paramount. In manning expeditions for inland explorations the European element should be limited to a minimum, as experience has convinced the writer that the best results are obtainable by a staff of native workers, because—

(*a*) When properly trained they are, with few exceptions, willing and thoroughly susceptible to discipline.

(*b*) They are easily fed, and can adapt themselves to circumstances with astonishing ease.

(*c*) They perform their duties cheerfully, even under the most unfavourable conditions, and do not conspire to supersede.

(*d*) Amongst other reasons, they rarely cause after trouble, nor do they pretend to know and to have done more than their leader. These remarks, be it understood, apply particularly to Polynesians, some of whom for several years constituted the writer's field staff.

We shall now proceed to deal with that part of our subject embracing instrumental equipment.

In selecting instruments for use in the field of exploration especial care should be exercised in testing both their quality and accuracy, while suitableness for the special purposes for which they are intended should also receive due consideration. To this end the leader's especial attention should be centred before setting out upon a journey, so that index errors and other defects inseparable from even the best class of instruments may be recorded, while the most favourable conditions are available. This point is so essential to success that it is difficult to overestimate its value.

As to the most suitable class of instruments, it is well to bear in mind that portableness, combined with utility, is the great desideratum, and nothing should induce the explorer to enter the field with a ponderous and clumsy instrumental equipage, suited more to the surveyor than to the rapid traveller.

First, a pocket compass should be provided; this must be furnished with a needle having a pivot revolving between a pair of agates, so that vertical vibration may be minimised; one arm of the needle should be provided with an adjusting weight to compensate for its dip in localities where it would be affected by local attraction. The use of this compass is to indicate the direction travelled, and may be said to be the fundamental basis of the "dead reckoning." This instrument requires to be supplemented by a prismatic compass of about three inches diameter, having a flat needle of equal size from end to end, with a circle of very light aluminium divided into degrees from zero to 360, so that magnetical azimuths may be recorded as 290° instead of the old school system of N. 70° W. Instead of an ordinary card the lower surface of the aluminium circle should be covered with a thin disc of mica; this has the advantage of minimising excessive vibration, both vertically and horizontally, caused by friction with the air-resistance in the box, an obstacle that often perplexes, and which not infrequently causes errors in rapid observations made by the ordinary card. Mica also possesses the very desirable advantage of not being influenced by moisture. The general use of this compass is for the determination of bearings of distant objects, especially remarkable hills, mountains, and other natural features, also for observing the sun's magnetic amplitudes at the time of its rising or setting to determine the declinations of the needle. This instrument should be provided with a handy stand of about four feet in height, composed of a piece of very light rounded wood of about 1½ inches in diameter, having a flat head formed of a small thin board, about three inches square, and fastened in position by means of a wooden peg; the opposite end of the stand should be pointed. This simple arrangement, when stuck temporarily in the ground, will enable an observer to determine the bearings of objects with greater facility and accuracy than by the questionable and unsteady method of simply holding the compass by hand.

When the summit of a mountain or a hill is the point of observation the compass should only be used for observing the magnetic bearing of one distant and well-defined object, the angles subtended by that and other features being determined by the box-sextant. This assures greater rapidity and obviates liability of errors from local magnetic complications which, on isolated hills of igneous or granitic rock, are often considerable.

As an instrument of very great utility the box-sextant is indispensable to the explorer, not only by reason of its convenient size, which for transportation entitles it to rank far before the nautical sextant, but also for the compactness of its structure, which renders it less liable to injury than the other more pretentious form. The box-sextant may, however, in the hands of some observers, appear not altogether free from the disadvantage of the necessity of requiring considerable practice in its manipulation, especially when more than ordinary accuracy is desirable—such, for instance, as when the meridian altitude of stars requires to be observed for latitude. Practice will overcome that impediment and enable double angles to be measured, by the aid of the artificial horizon, to 01′, or half a mile of latitude, so that practically the limit of position error will be found to be within a mile. Instrumental errors are liable to affect observations of angles exceeding 110°; with measurements below that number of degrees existing errors may readily be detected and equated by observing one or more northern and southern stars. At the time of observation instrumental index error should always be determined and proper entry made thereof, indicating the same by a + or − sign, so that it may be applied to all apparent results. Frequent instrumental adjustments should not be resorted to, it being far preferable to apply a known index error to all observations than to have recourse to unnecessary and habitual displacement of the more delicate parts of an instrument. When observing star altitudes with the box-sextant the telescope should be withdrawn while bringing the image of the star down to and making preliminary contact with the artificial horizon, after which it should be carefully inserted and the contact completed. It will, however, be found advantageous to avoid the use of the telescope altogether when observations of horizontal angles are being conducted—such, for instance, as in the determination of bearings of hills and other natural features, where a more extensive field may be obtained by observing through the large aperture. The box-sextant, notwithstanding its especial applicability to general purposes, should not be relied on, nor, in fact, used at all, in the determination of longitudes by lunar distances, the graduation of the limb being of such an unsuitable character as to render results of no practical value. For the determination of the breadths of rivers the box-sextant will be found most serviceable; it may also be used with advantage in determining the lengths of river-reaches not exceeding a quarter of a mile, by observing the angle subtended by a ten-feet staff. This staff should, theoretically, be held in a horizontal position, at right angles to the line of observation, because when in the vertical position the refraction at its bottom is much greater than at the top, causing an error in its observed angular length, and this, when the bottom of the staff rests on the ground, is often considerable. This difficulty may, however, be obviated, simply enough, by the use of a 13ft. staff having white marks at 3ft. from the bottom and at the top; the refraction at 3ft. from the surface of the ground being practically equal to that at 13ft. The vertical staff will be found in practice the most reliable, because it can be more easily held in an upright position by an assistant than precisely at right-angles to the observer when horizontal.

Although the nautical-sextant is more easily manipulated, and the angular measurements observed by it are of greater value, its adjustments are so delicate and it is not specially adapted for transportation by land, therefore it cannot wisely be considered a substitute for the box-sextant, although it ought to claim a place in the equipment of a large party. For extensive use the writer prefers the prismatic sextant of Pistor and Martius; whereas the common sextant is restricted to about 60° of arc the other measures angles from zero to 180°, which enables double altitudes to be observed by it of objects in or near the zenith.

As an auxiliary to the sextant an artificial horizon is necessary; of this there are several varieties, each one of which advances certain claims to excellence of worth. The solid block-glass mirror, with levelling screws and spirit-level, has its advocates and admirers, but while its usefulness for sea-coast work, where much wind is often met with, is freely admitted, it cannot be so safely relied on as a fluid reflector. The simple trough of mercury with glass cover is undoubtedly the best-known form, but, even with the greatest care, the mercury is so liable to loss that on the whole it is a question worth considering as to whether a pannikin of cold tea is not, after all, the most convenient and desirable form of reflector to use when well sheltered from wind and inaccessible to mosquitoes.

For special purposes, such as the conduct of extensive detail surveys, the transit theodolite is indispensable, but for the ordinary exploration of extensive tracts of country, where, even at best, the results can only be regarded, literally, as approximate, it is far too cumbersome. When available it will, however, be found very useful in the determination of the heights of mountains, trigonometrically, and of hills in localities where the sea horizon is visible. The approximate altitude of a hill may be determined by observing the angle of depression of the visible sea horizon in minutes, which, being corrected for refraction and squared, will be equal to the height of hill in feet above sea-level. For the measurement of base lines and short distances the steel band is decidedly the most convenient; this is now made in lengths of from 66ft. to 660ft. The writer, however, found the 330ft. length the most useful for most purposes. Its great utility is clearly observed in the measurement of moderately undulating surfaces, unobstructed by jungle or forest, where deep gullies separating ridges may be spanned, or in measuring extensive plains and foreshores. Care requires to be exercised in avoiding acute curves and twists in the band when in use and in winding and unwinding. It should also be kept free from rust, and to this end especial vigilance is necessary when within the influence of the sea, or in localities where salt water is present.

As in most cases the altitudes of elevated features depend chiefly upon barometric measurements, it seems proper to refer to the instruments available for this purpose. The aneroid barometers are, except in special cases, the instruments of most practical value to the explorer for the measurement of heights. Of these the larger sizes are not generally convenient, owing to liability to derangement through sudden jerks. It will therefore be safer to carry two small aneroids of nearly equal size and similar make. The readings of both of these should be recorded when at rest, so that any apparent sudden divergence will indicate the probable arrangement of one of them, the particular one being easily detected when any position of known elevation is reached. The influence exercised upon aneroids by the variations of temperature renders the application of some test necessary, and for this purpose no readier and convenient means will be found to offer itself than that afforded by the exposing of the instruments alternately in the sun and in the shade, care being observed that while in these positions the differences of temperatures and of readings are minutely recorded. Frequent manipulation of the adjusting screws in the field should be avoided; indeed, unless by the most skilful hands, no alteration of that governor should be attempted during the progress of a journey. It were better and decidedly safer to use a known index error, even though great, than to attempt an adjustment, for a gradual change invariably follows, and continues for several days, a movement of the adjusting screw.

In the writer's opinion, hypsometric measurements are not reliable for the accurate determination of heights, the equivalent of 510ft. to 1° Fahr. being too great in range to satisfy the requirements of accuracy, and this will become all the more obvious when emphasised by the fact that the boiling-point of water varies considerably with the shape of the vessel used to boil it in; for this reason alone hypsometric values can only be regarded as mere approximations.

Notwithstanding the popularity of the plane table with some travellers, the writer's experience convinces him that it is not only deficient in accuracy, even when in professional hands, but very grave mistakes are liable to be made when attempting the orientation of the table at isolated stations where no connecting check with other established points is available. In thickly-timbered country, unless extensive clearings are made, it is practically useless, and its inability to record the number of degrees of measured angles frequently leads to confusion in attempting to rectify accumulated errors, and errors arising from unusual causes at any one station.

In tropical climates, and in localities where the diurnal range of temperature is very great and irregular, the greatest care is necessary in the conduct of instrumental observations, more particularly with telescopic instruments with movable, adjustable diaphragms containing spider-lines. Excessive humidity is inimical to perfect adjustment, and during the rainy season, in localities possessing wet and dry seasons, it is almost impossible to accomplish a day's journey without having recourse to frequent tedious and vexatious instrumental adjustments. These conditions will be found particularly prominent in country interspersed with belts of forest and open spaces, where the conditions of forest shade are not adaptable to those exposed to solar influence. The importance of closely watching instrumental changes under these conditions cannot be too strongly emphasised, for very serious errors are almost inevitable when this is not attended to.

When theodolites are used it will be found advantageous to employ, instead of the usual cross-hairs of platinum wire or of spider's threads, a thin glass disc with the horizontal and vertical lines etched on it; this glass disc is readily fastened to the diaphragm by cement. This form was used by the writer in field practice in excessively damp localities for several years, with most satisfactory results; he can therefore recommend it as being in every respect superior to the usual cross-hairs.

Not the least important in field practice is the method adopted to so record the operations, as to avoid confusion and to minimise errors in the Cartographic Department. It not unfrery on

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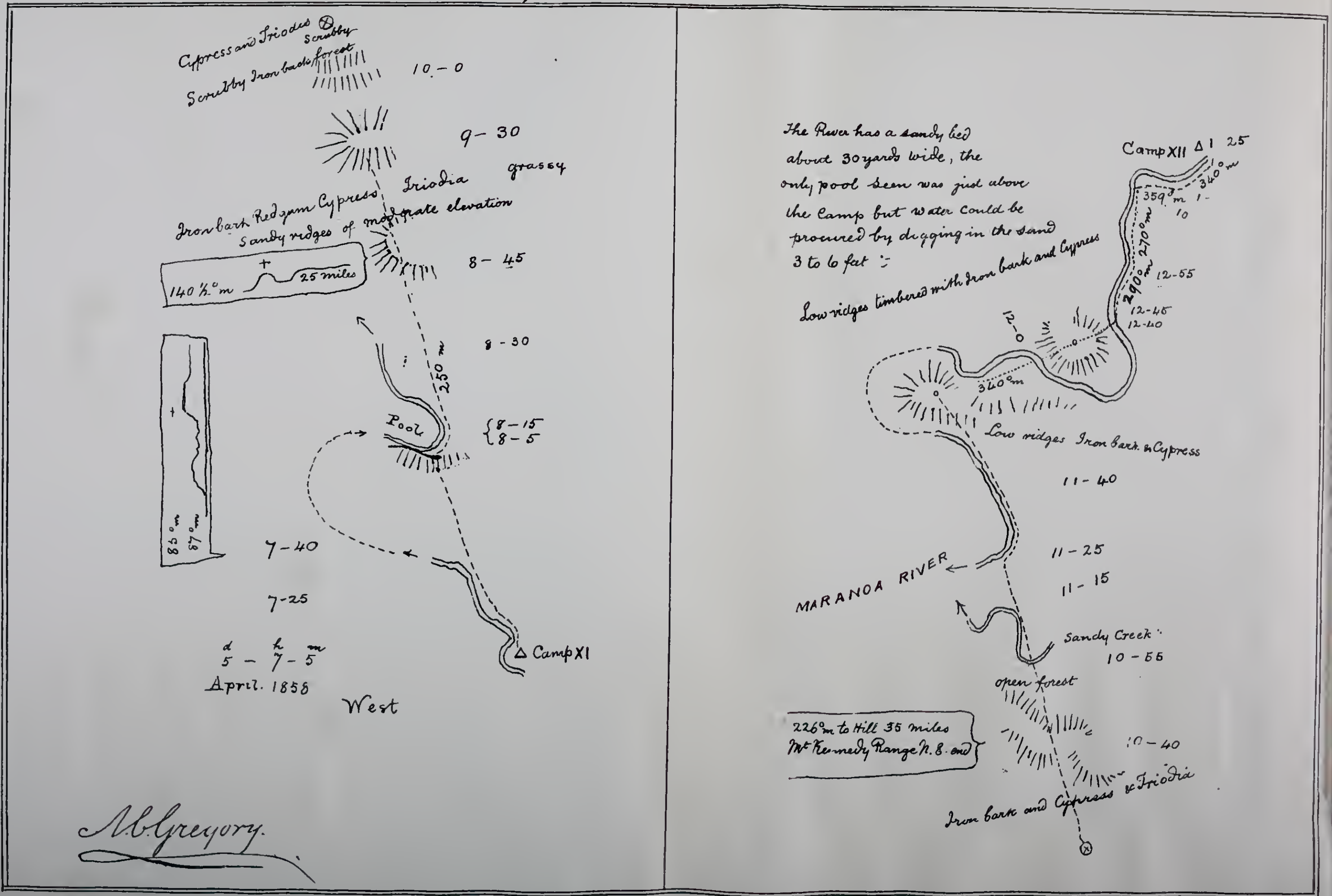
Vanua Levu. These will illustrate diagrammatically what is

Fac-simile pages of Field Book used by Hon. A. C. Gregory on Expedition in Search of traces of Dr. Leichardt 1858.



The River has a sandy bed about 30 yards wide, the only pool seen was just above the camp but water could be procured by digging in the sand 3 to 6 fat :-

226° m to Hill 35 miles
Mt Kennedy Range N. 8. end

A.C. Gregory.

Printed for the Journal of the Manchester Geographical Society by Benj. O'Connor, 4, Fountain St. Manchester.

quently happens that field observations of the greatest value are rendered practically useless to the cartographer through careless and unintelligible entry in the field-book. It is well known in the annals of exploration that the arduous labours of many explorers have been deprived of much of their value by inability to even approximately locate their discoveries on the maps and by not affording sufficiently reliable data to subsequently identify the features of the country.

The method adopted for recording the details of exploratory operations by one of our greatest living Australian explorers, the Hon. A. C. Gregory, to whom the writer is indebted, may be elucidated in the following manner: Each page of the field-book constituted a small sketch-map, upon the face of which all minor features on and near to the route were delineated, together with a record of the actual course travelled. This course was defined by straight lines, upon which were noted the bearings in degrees counted from zero to 360°, in the direction of north to east, such as 45°, 90°, 270°, and 315° as the case might be, the letters designating the cardinal points being avoided entirely, thereby minimising errors in entry. The distances in time were recorded at the commencement of a line and at the points where changes of bearings occurred. Stoppages, or other delays, were indicated by bracketing the commencement and the end of the time lost as compared with the average rate of travelling. Supposing a course was travelled north-east from seven o'clock till half-past seven, when a change was made to east till eight hours fifty minutes, seven minutes having been lost in crossing a steep ravine, the entry in field-book would indicate this in the following manner:—

$$7\text{h.–}0\text{m.—}45^\circ:\ 7\text{h.–}30\text{m.—}90^\circ,\ \left.\begin{array}{r}7\text{h. }41\text{m.}\\ 7\text{h. }48\text{m.}\end{array}\right\}\ 8\text{h.–}50\text{m.}$$

In localities where rugged and broken surfaces render a circuitous route necessary it will be found advantageous to record the average course in a direct line in the field-book, so that, as far as possible, confusion may be avoided by the absence of numerous traverses over comparatively short distances. By this method the route travelled will be indicated by a number of right lines, each denoted by its bearing in degrees and length in time, exclusive of delays, so that they may readily be delineated upon the map, together with all features in their neighbourhood.

The accompanying sketches are exact copies, the first of a page of No. 1 Field-book used by the Hon. A. C. Gregory on his famous expedition to Central Australia in search of the long-lost Dr. Leichhardt in 1858, and the second of a page of No. 1 Field-book used by the writer in his survey and exploration of the coast of Vanua Levu. These will illustrate diagrammatically what is probably the most convenient methods for recording field observations, whether made by the explorer, the surveyor, or ordinary traveller.

Inseparable from the foregoing subject, regarding route traverses, is the very important consideration of obtaining a satisfactory approximation of travelled distances. To this subject careful and patient attention should be bestowed, because to the practical man nothing is so unsatisfactory and annoying as to find that after a fatiguing journey, or on the completion of the survey of an inhospitable region, the positions determined astronomically and by dead reckoning, with aggravating persistency, refuse to agree within reasonable limit. For reconnoitring purposes and for long journeys, either by land or by water, distances by time are the most convenient and practicable when actual measurements are inexpedient. To obtain satisfactory results from the recording of the time occupied in travelling in a given direction, an average hourly rate will require to be established. This may be most conveniently accomplished by the plotting of a whole day's journey in the direction of north and south, the hourly rate of three miles being assumed for that purpose. If the difference of latitude of the two camps agrees with the dead reckoning the assumption of the hourly rate of three miles will be a correct one, but if on the contrary, it will become necessary to adjust the latter to the former by a proportional distribution of the existing difference. In determining this standard of comparison prevailing circumstances must receive careful consideration, especially the character of country, conditions of weather, men, and beasts of burden. This is a matter of some importance, for while this standard may be satisfactorily applied to subsequent daily journeys, *cæteris paribus,* a material variation from former conditions will render its modification necessary.

Dead reckoning should on every possible occasion and by every available means be verified, either by stellar, solar, or even lunar observations. As it frequently occurs, however, that an overcast sky and unfavourable atmospheric conditions render these irregular and uncertain, the bearings of all notable physical features of the country traversed should be carefully noted, their estimated distances recorded, and a faithful description of their characteristics given; special reference should also be made to the prevailing weather conditions. The latter subject is important, not merely from a climatological standpoint, but the general physical appearance and the apparent distances of distant objects are very considerably influenced by local atmospheric conditions. The bearings of distant objects are not only useful in providing a check on estimated distances travelled, but when carefully observed and well-conditioned they assume the form of a preliminary trigonometrical survey, by which we are enabled to locate prominent features by the method of intersections. For cartographic purposes they are also of special value in furnishing, which after all is, the only safe material for the basis of a map of the country. The labours of the cartographer will likewise be facilitated if the geographical mile of 1m. of latitude, equal to 92½ chains, be adopted in the measurement or estimation of distances exceeding a quarter of a mile instead of the statute mile of 80 chains.

In observing the bearings of distant objects from different positions the necessity for the exercise of great care in the selection of well-defined and recognisable features cannot be too strongly emphasised. If trees or rocks be chosen they should be distinctive and not deceptive in character; if the headlands of a coast-line be the objects of sight they should be used only when unmistakable from others in their neighbourhood. The writer feels justified in dwelling earnestly on this subject, for his own experience in frequently having tested the work of others has repeatedly shown him that inaccuracies were in the majority of cases the result of, *not* an inability to *observe, but* the want of power to *identify,* because objects assume different forms when viewed from different aspects.

In exploring broken and mountainous country bordering upon the coast-line preliminary steps should be taken to observe the bearings and angular distances of all prominent features from well-selected stations on the sea-shore. If necessary these stations could be connected by traverses, their positions defined by astronomical observations, and the map of the country based upon them. To minimise errors the subtended angles, as well, as the compass bearings from point to point, should be observed, especially when the observations extend over extensive areas the geological character of which renders great liability to magnetic complications unavoidable. To obviate these on inland journeys, where reference to coast-line features is not possible, back-sights should be taken at every change of bearing and the necessary corrections for magnetic declination applied to the new courses. By this means tolerably accurate results may be obtained when the ordinary prismatic compass is used.

In preliminary triangulation, for the purpose indicated, very acute angles should if possible be avoided, and manifold bearings radiating from any given point discouraged; the one favours inaccuracies and the other has a tendency to confuse. When two courses are available accept as a maxim that least associated with complications.

When examining extensive tracts of country their classification and approximate areas should not be overlooked. Fertile valleys should be separated from sterile ranges, alluvial flats from hills, and mountain slopes from plains; some distinction should be drawn between forest and scrub, and green grassy patches should not be forced to mingle with jungle. These should be carefully defined and their areas judiciously approximated.

In marking trees near camping places, and at stations where important observations are conducted, care should be exercised in guarding against superficialness. This is an important part, both for subsequent reference and identification; it should therefore be thorough. The bark and alburnum should be removed from its side and the marks cut deep into the wood of the tree, special consideration being given to their legibility. It might perhaps be better that this should be done under the personal supervision of the leader.

Concerning the exploration of coast-lines it should be understood that the physical configuration of the land frequently affords many coignes of vantage not usually met with in inland regions. These, if properly utilised, may furnish ready and convenient material for useful systems of triangulation. The initiatory stage of triangular operations should be marked by the adoption of a tolerably reliable base-line, to which the general work should be referred. Headlands and mouths of watercourses should be connected by bearings, and from these the bearings of all prominent inland features bordering upon the coast-line should be observed, the intermediate features being merely a filling-in of details. These bearings should be so regulated that the positions from which and to which they are observed may be readily determined by the method of intersections. In tropical countries, where coast-lines are fringed by coral reefs, much useful work may be accomplished in the approximate determination of heights of elevated seaboard features, and in checking barometric measurements by the location of successive base-lines over the surfaces of the reefs. From the termini of these angles of elevation may be observed the results if carefully aimed at being remarkably satisfactory. These base-lines may be expeditiously and accurately measured at low water by steel bands of 5, 10, or even 20 chain-lengths. When connecting coastal features by these means, adjacent islands and neighbouring rocks should also receive attention, their positions being carefully observed from convenient headlands, their leading features approximately delineated, and their areas estimated.

Regarding the survey of rivers and of creeks, to which former reference was made, it is proper to state that while a useful object may be accomplished by the approximate measurement of the sinuosities and general trend of a stream for cartographic purposes, other observations requiring no special skill and entailing no tedious complications, may be made that will materially add to the value of final results. It is, the writer maintains, an improper application of power to consume precious time and means in navigating or traversing watercourses when the results comprise nothing more than meagre data for mapping. This unhappily applies to the majority of cases. If current geographic literature be consulted it will generally be found that accompanying local maps simply show approximate width and direction of stream, with occasional reference to remarkable features, especially rapids and waterfalls. Seldom is any attempt made to indicate channels most suitable for navigation, and it is very unusual to find any information concerning the character of channel-beds, the depth and volume of water, and velocity of current. Surely it is most useful to know the volume of water passing through a river channel; during periods of rain it affords valuable data for estimating the rainfall, and in dry seasons it indicates the approximate value of the water resources of the country.

To obtain this information cross sections should be taken at convenient places by measuring width of stream, depth of water, and velocity of current. The former may be accomplished by the simple method of perpendiculars, when the stream is too wide for measurement otherwise. A sounding line or pole requires to be used for depth of water, and velocity of current may be determined by measuring a given part of river bank, defined by marks—a floatable substance being cast into the current and the time it occupies over the measured distance carefully noted. By this means the velocity per hour or fractional part of an hour may readily be determined by simple proportion.

Latitude and Longitude.—The determination of positions astronomically is an important and necessary part of an explorer's duty. Estimated positions may be obtained by the method usually called *dead reckoning*, but when necessity demands greater accuracy latitude and longitude have to be obtained by the observation of some celestial object. Concerning the objects to be observed, it were almost as impossible to offer suggestions to suit general conceptions as it would be to expect a universal concurrence with an individual opinion on the laws that regulate the life and affairs of mankind. The writer, therefore, in the following remarks, simply refers to those most familiarly associated with his own professional practice, being convinced that they are the most suitable for the purposes indicated, and for those with limited means at their disposal for the conducting of observations outside the centres of civilisation.

For the determination of latitude stellar observations should be conducted, the objects chosen being the planets and stars of the first, second, and third magnitude. These are easily identifiable, the former from the latter, when distant from the horizon, by the absence of the familiar twinkling, while the latter are distinguishable from one another by the characteristic constellations they occupy. Thus in the northern hemisphere we have the well-defined constellations of Ursa Major, Cassiopea, Cepheus, Cygnus, Draco, and Auriga; in the southern heavens, the beautiful circumpolar constellations of Crux, Centaurus, Argo, and Eridanus. Planets may be distinguished from one another by consulting their ephemerides in the Nautical Almanac, and noting the times of their passages over the meridian of Greenwich. These, to correspond with local time, will simply require correction by a plus or minus quantity determinable by the longitude of the place of observation, east or west of the Prime Meridian, as the case may be.

To the mariner the sun may be a convenient object to observe, but with the explorer, who is usually on the march at the time of its meridian passage, the case is altogether different, because a mid-day halt for the purpose of conducting observations might cause great inconvenience, loss of time, and confusion. Even were these objections obviated, the sun's position either north or south of the Equator renders the detection of errors, by the observation at the same time of an object having an opposite declination, impossible. Besides these another serious obstacle presents itself, for in tropic and extra-tropic regions the sun's zenith distance at its meridian passage is so small that its altitude cannot be measured by the ordinary sextant when the use of an artificial horizon is necessary.

In conducting observations of meridian altitudes, stars should, if possible, be selected with altitudes almost as great as the sextant used is capable of measuring, so as to minimise corrections for refraction. Probable errors should be eliminated by observing northern and southern declination stars. A place should be selected near the camp, where a north and south zone of the heavens is unobstructed by trees, and where the smoke and glare from the camp fire will not be likely to interfere with the observations. At this place an approximate true north and south line should be laid down by compass, making the necessary allowance for variation, and its position defined by a picket, or by some convenient object that may easily be recognised in the dark. By this means stars, when approaching the meridian, may readily be identified, and their altitudes conveniently observed. This, also, has the advantage of obviating the necessity of long and tedious waiting for objects to culminate, when the apparent position of meridian is unknown. When the star is north of the zenith, with declination north, the latitude = 90° − true altitude − declination; with declination south, the latitude = 90° − true altitude + declination. When the star is south of the zenith, and above the visible pole, the latitude = true altitude + declination − 90°; if below the pole, the latitude = true altitude − declination + 90°. When existing conditions render the observation of meridian altitudes impracticable, the latitude may be obtained by observing the single altitude of a star when off the meridian, the time of observation being known. The formulæ applicable to this method can be seen set out in "Loomis's Practical Astronomy," p. 148, paragraph 178. This method, which should not be adopted otherwise than as an alternative, may only be relied upon for satisfactory results when the object observed is near the meridian.

The determination of longitude is a problem associated with divers methods, and with so many nice complications, that its establishment by the explorer cannot be regarded otherwise, even when surrounded by favourable circumstances, than as an approximation to the truth. For nautical purposes, the method of lunar distances has long been in use, the facilities afforded at sea having favoured its adoption, the results in many instances being fairly satisfactory. As it is not, however, the writer's intention to advocate its use in this instance, reference need only be made to what appears to be the most practicable method both for convenience and applicability.

The traveller should be provided with one or more reliable chronometer watches, properly rated and adjusted to the mean time of Greenwich, or some other standard meridian. To obviate probable errors in uniformity of rate, every favourable opportunity should be utilised to check them by comparison with others or by astronomical observation. To determine the longitude of a place, east or west from the meridian to which the watches have been adjusted, local time requires to be found; the difference of longitude being equal to the difference between local time and corrected chronometer time.

Local time may readily and conveniently be determined by carefully observing the single altitude of a star when east or west of the meridian, and noting the exact instant of time by chronometer. Probable errors in latitude may be eliminated by observing stars of north and south declination, and those whose paths lie near the prime vertical. Probable instrumental defects should be minimised by the adoption of the mean of several successive sets of observations of each object. When the weather is favourable, and clouds are absent, local time may be found by observing equal altitudes of a star on opposite sides of the meridian.

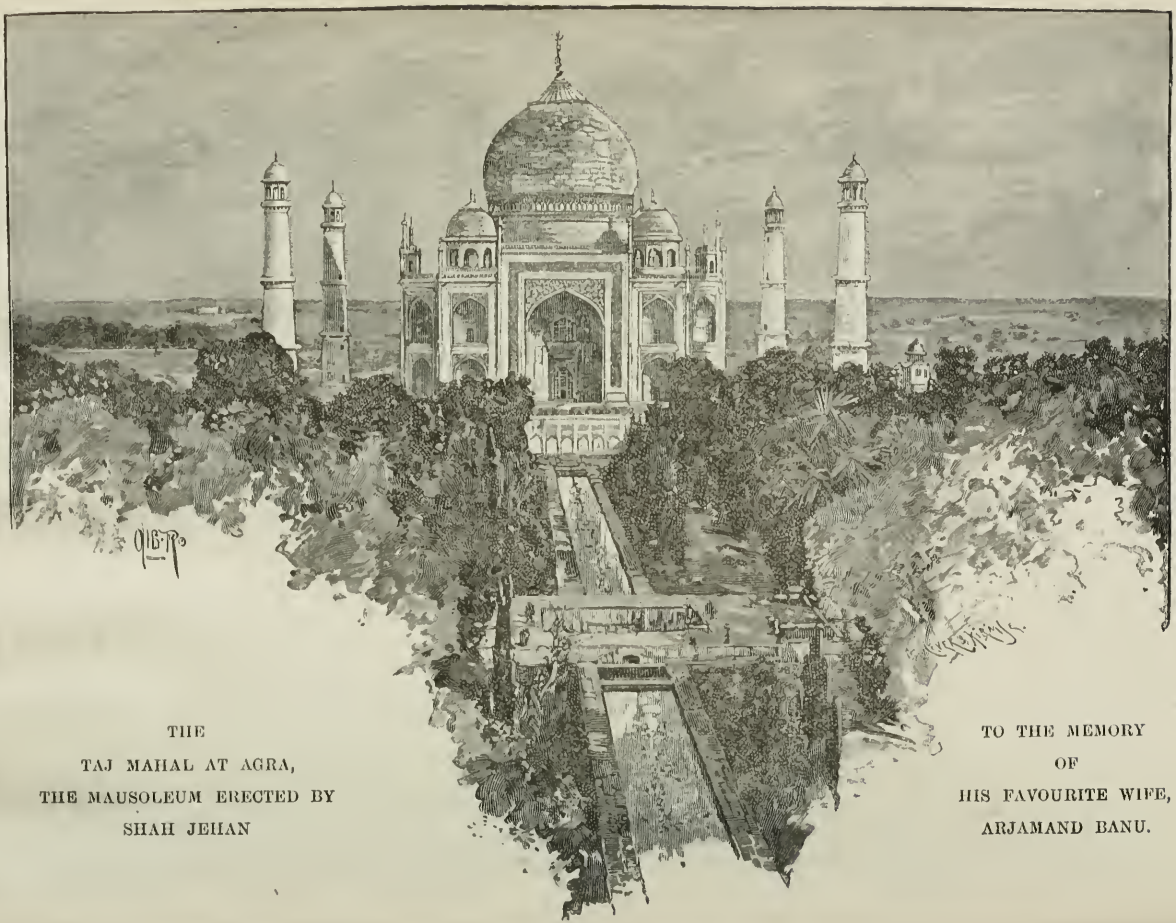
Given the latitude of the place of observation, the declination and corrected altitude of a star, its hour-angle, or distance from the meridian, may be computed by the formulæ given in "Loomis's Practical Astronomy," p. 133, paragraph 168.

If, when observing the altitude of a star for local time, its magnetic bearing is also noted, the declination of the needle may readily be determined by comparing the magnetic azimuth with the true azimuth of the star, as indicated by its hour-angle in degrees. This will be found advantageous by economising labour in computing and in obviating the necessity of observing elongations and amplitudes.

To show the solution of the spherical triangles it was at first intended to use as examples several of the writer's own stellar observations, made by him at the time he conducted the observation of the Transit of Venus in Fiji, in December, 1882, but for want of time and space this intention could not be carried out.

Mr. John Coles read a paper on "The Art of Observing" at the British Association Meeting. In this paper the art of observing with portable instruments for latitude and longitude was described, as well as the use of such simple surveying instruments as the plane table and prismatic compass. The different methods suitable to explorers of fixing positions by astronomical observations were explained, and the manner in which they may be taken so as to eliminate errors was pointed out. The latter part of the paper dealt with surveying, fixing heights by barometer, route surveying in a jungle or forest, and it concluded with some remarks on Mercator's projection in cases where it is required to lay down bearings, &c., or plot a route. The author also called attention to the fact that such instruments as the plane table and prismatic compass might be used with advantage in schools, and that such practical teaching in the field could not fail to give pupils a more intimate knowledge of the principle on which maps are constructed and surveys carried out than they could gain in any other way.—*Proceedings of the Geographical Section of the British Association.*

The Fourth Centenary of the Discovery of America.—The Spanish Government, desirous of celebrating with éclat the fourth centenary of the discovery of America, is preparing, to that end, different fêtes and solemnities, of which some, by their international character, more particularly interest France. Such are, notably, the exhibitions which will open at Madrid, the 12th September, 1892, and which will remain open up to the 31st December following; the Congress of Americanists, which will be held at Huelva from 1st to 6th October, 1892; the International Congress of Orientalists (10th session), which will be held in September at Seville; and the Spanish-Portuguese-American Congress, which will meet at Madrid in the month of October. One of the exhibitions, called the Historical American Exhibition of Madrid, has for its object the representation, in a manner the most complete, of the state in which the different countries of the New World appeared before the arrival of Europeans and at the time of the conquest, up to the 18th century. It will comprise all objects, models, reproductions, plans, drawings, &c., having reference to the people who at that time inhabited America, to their customs and their civilisation, and all those having reference to the navigators, to the first colonists, and to the conquest itself. The other exhibition—the Historical European Exhibition of Madrid—will be equally retrospective. It will include objects of art belonging to the period from the commencement of the 15th century to the end of the 17th century, thus giving an idea of the degree of civilisation which the colonising nations had reached at the time of the conquest. Architectural works will not be included among the works of art admitted to this exhibition. A place will be specially prepared to receive objects of liturgical art for the use of the Catholic Church. The third exhibition will be an International Industrial Exhibition. The fourth will be an International Exhibition of Fine Arts. More ample details are likewise given in a special paragraph upon this exhibition, upon the congresses, and the meetings of the Spanish academies, &c. Further information and applications for admission will be given by M. le Mis. de Croizier, Délégué Général du Comité du Centenaire, à l'Ambassade d'Espagne, 36, Boulevard de Courceilles, à Paris.



THE
TAJ MAHAL AT AGRA,
THE MAUSOLEUM ERECTED BY
SHAH JEHAN

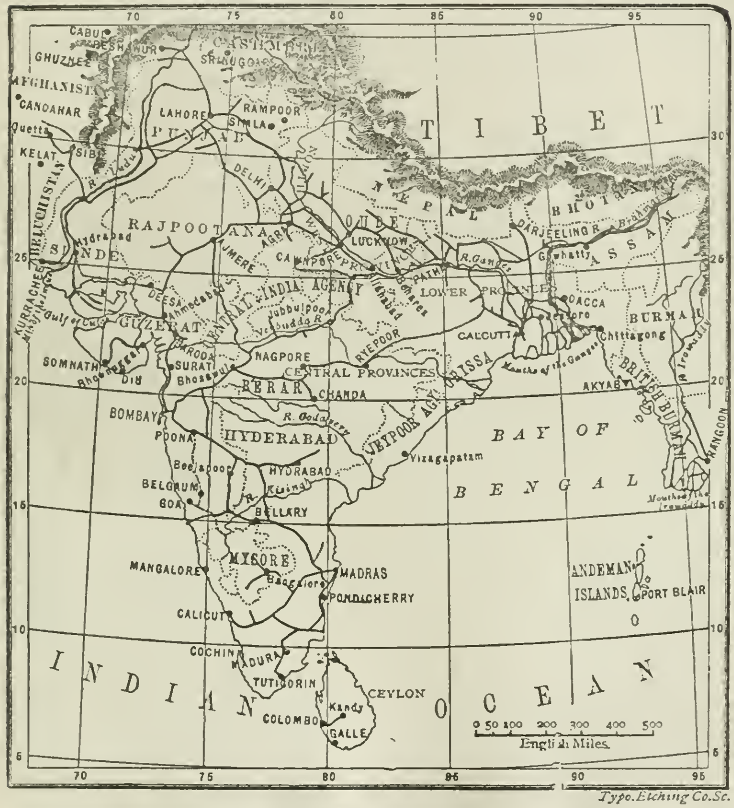
TO THE MEMORY
OF
HIS FAVOURITE WIFE,
ARJAMAND BANU.

(See p. 184.)

IMPRESSIONS OF TRAVEL IN INDIA.—*(See Maps.)*

By Mr. C. E. Schwann, M.P.

[Addressed to the Members in the Memorial Hall, Thursday, April 2, 1891.]



Typo.Etching Co.Sc.

SKETCH-MAP OF ROUTE.

Having been requested to address the Society on my late journey to India, I gladly comply, merely premising that whatever I may have to say must be taken as the mere impressions of a traveller.

Our journey was through Italy, and we reached Brindisi late on Saturday evening, November 1st, and found, on opening our French shutters in the morning, that the great handsome steamer which lay along the quay side was the P. and O. boat, the Sutlej. At about ten o'clock on Sunday evening the mails came on board from the station, and the Sutlej slipped her moorings and left Brindisi.

On the fourth day, an hour before dawn, we neared Port Said, and very lovely it looked in all the soft greys of an early Eastern morning. To avoid the clouds of coal dust during coaling, everybody goes on shore for an hour or two at this queer little corner of the earth, which only sprang into existence through the opening of the Canal. A motley crowd of inhabitants it contains—of Arabs, Jews, Englishmen, Italians, Turks, Copts, Egyptians, &c. The progress through the Canal is a strange experience. At first wide lagoons spread on either side, upon which float countless flocks of pelicans and flamingoes, their red wings quite distinguishable with a good glass. Soon we pass the first Arab encampment, at a point where a long neck of sand traverses the lagoons. In former days the men of the desert and their camels could cross dry-shod from Palestine and Syria to Egypt; now they find their ancient right of road barred by the innovations of the West. By far the greater portion of the Canal was passed at night, the electric search-light being placed at the very bows of the steamer, and very mysterious our progress was, as we moved slowly ahead in our manufactured moonlight.

To relieve the monotony of the voyage down the Red Sea, the "Sutlej Amusement Company, Limited," got up some beautiful *tableaux vivants*, representing the three continents which the steamer touches on her journey. Though arranged within twenty-four hours they were very successful. "Europe" was represented by an emblematical figure of Britannia, with sailors on either side, and a lion, made of a tawny yellow railway rug and a rope, unravelled at the end, crouching at her feet. "Africa" was symbolised by the meeting of Livingstone and Stanley, and "Asia" by an Indian wedding, the bride being a very charming Indian lady, surrounded by servants, friends, &c. She was depicted as being in the act of receiving the blessing of her father, who was scattering flowers on her head. The Lascars and Hindoo punkah-boys, who appeared in their beautiful turbans and scarlet silk waistcoats, made this a very gorgeous spectacle. After sunny days of *dolce far niente* and evenings spent in dancing or enlivened by musical and dramatic entertainments, we began to near our goal, and on the morning of November 17th we dropped anchor in Bombay—or "Bom Bahia" (beautiful bay), as it was called (not without reason) by its first European possessors, the Portuguese.

India contains about two hundred and eighty-five millions of inhabitants, and one-and-a-half million square miles of territory. From the following account I hope some general idea will be gained of the present civilisation of the natives, as well as of the life of those members of the English race who take so prominent a part in the direction of the affairs of that most important portion of the British Empire.

Since our arrival on Indian soil our ideas have been much enriched by our new experiences of men and things. We have been received by our English, Hindoo, Parsee, and Mussulman friends with Eastern hospitality and politeness Every day a carriage and pair, with picturesque footmen, wearing scarlet and white turbans and with bare feet, have awaited our pleasure, and made it possible to carry out all that we wished to undertake in sight-seeing. These were sent by a Hindoo lady. We have had many interesting conversations with gentlemen of the various communities now congregated in Bombay. At first the beauty of the costumes seen in the streets—the flowing robe of the Parsee ladies (often rose, white, blue with an exquisite narrow border of ribbon embroidered with a small pattern in silk or gold thread), the clinging, coloured muslin dress of the Hindoo women, and the gorgeous turbans and costumes of the Mussulmans—engages the attention; but as these impressions become familiar, the graver questions which affect the life and happiness of our 285 millions of Indian fellow-subjects press themselves on the attention.

As far as our preconceived ideas of India are concerned they are quite outdone by what we see of the country, climate, inhabitants, and costumes. It all seems like a vivid realisation of the main features of the "Arabian Nights." We see the same motley crowds, clothed in the brightest-coloured garments possible, with the same old woman moving mysteriously along, as if she had a message to take to some imaginative youth in the bazaar from some maiden hidden away behind the latticed windows of yon Mussulman's house, as is depicted in those unrivalled tales of the East. The gorgeous afterglow, when the sun has sunk below the horizon, which brings the palms and bread-fruit trees into such beautiful relief as they tower above some spacious water tank, must be seen to be realised. We are simply overwhelmed by the variety of glowing colours, and picturesque human figures visible everywhere in the crowded streets. Here a group of Parsee merchants, wearing their well-known distinctive head-gear, discuss business under shelter of the trees round a fountain. There a Hindoo woman glides along with her easy grace, born of absence of all restraint to the motion of the limbs beyond a long piece of bright-coloured muslin wrapped round the body. Now a banyan merchant rolls along in his bullock-carriage, or an English officer rides by in his white helmet and white linen undress uniform—everywhere colour, brightness, and animation, defying the artist by the brilliancy of tints scarcely attainable on the palette. But though such scenes continually attract one's attention, yet I have not been allowed much time for peaceful contemplation of them, but have been busy from morning to night sight-seeing, receiving callers (English, Parsees, Hindoos, and Mohammedans), visiting schools and hospitals, and obtaining information on practical subjects, in spite of the surroundings, which invite more to poetic enjoyment and repose. Some of the Indian gentlemen I have met hold high legal appointments, and are men of great attainments, such as the Hon. Justice Telang, a Judge of the High Court of Bombay, who well deserves his position. He was good enough to arrange for us to see the present position of education amongst the Hindoo girls of the middle class, by assembling the scholars of three schools in the large drawing-room of Mr. Raoji Jagannath Shankarshett, whose grandfather had been a pioneer in educational work in Bombay. It was a very interesting sight to see the girls, ranging from six to twelve years of age, in their pretty round caps of coloured satin embroidered with small silk flowers or with gold embroidered band ; a silk or satin bodice more or less embroidered, and skirts in red, blue, or yellow material completed the picture, and made a very bright and picturesque effect. The little people recited in the vernacular (Mahrattee) language, and evidently seemed very intelligent. Finally, after a few speeches and the presentation of bouquets and garlands, "God save the Queen" in Mahrattee was sung by the children, and the assembly dispersed.

As a matter of fact, primary education among the Hindoos in the city of Bombay is very behindhand, only 2 per cent of their children being at school. It is not so with the Parsees, who are wealthy and exceedingly generous both to their own people and to other races, whenever need arises, and who educate all classes of their co-religionists admirably. Their schools are a pleasure to behold—with every modern convenience and appliance—beginning with the kindergarten system for infants, and going on with secondary and higher education until the students are able to enter the University. There are 100 per cent of Parsee children at school in Bombay city, 60 or 70 per cent European and Eurasian (*i.e.* of mixed European and native race), and only 2 per cent of Hindoo children.

The primary schools were a year ago handed over to the municipality of Bombay by Government, and little has been done since to effect any change for the better. A dispute is going on as to what share of the extra expense in building proper schools should be borne by the Corporation and what share by Government. But as Mr. Kirkham, the Government School Inspector, is a member of the Corporation, you may be sure that he will not let the matter sleep. It does not redound to the credit of the Government that better schools were not erected before they were handed over to the municipality. Some of those I visited were very miserable—in houses not built for schools, in which I found some rooms very dark and badly ventilated, crowded with boys who appeared clever and bright, in spite of their surroundings. This seems to be the case generally, but the early marriages cause their intelligence, I am told, to diminish later on. Mrs. Dr. Peechey Phipson, of Bombay, who is well qualified to speak from her long experience at the Lying-in and Children's Hospital here, delivered a very able address at the hall of the "Prarthana Somaj," a month ago, which clearly shows how the early marriage system is one of the chief causes of sterility, and that where the young wife (of 10 or 12 years of age) bears children, they are puny and sickly—the custom leading to the slow but sure degeneration of the race. She points out also that Hindoo girls are married before they reach the age of puberty—much before the body is formed and developed—and this causes the individual untold suffering, and often a painful death. Her address is to be translated into the vernacular, and should be distributed broadcast amongst the more intelligent members of the Hindoo community. When they have had time to digest this and similar works, it will become a question whether the Government should not take steps to prevent children, even though married, from leaving their parents' home for their husband's, until they have reached such an age as to insure full physical development. Dr. Phipson alleges that it is a fallacy to maintain that Hindoo girls reach maturity at an earlier age than English girls, and asserts that the exact contrary is the case. Before leaving the subject of education I ought to say—to avoid causing any wrong impression—that the educational advantages offered to the native Hindoo population in the Mofussil (*i.e.*, the rural districts as opposed to the cities) are very good on the whole, and that in most villages the schools are airy and suitable for the purposes of education. My strictures on education apply specially to the city of Bombay.

As I am merely relating first impressions, so as to put anyone who is ignorant of India in a position to form some preliminary ideas as to its people, I will not give a list of the institutions, educational and other, with which Bombay has been endowed, through the energy of the Government and the generosity of the Parsee community, but amongst these are the University of Bombay, the Elphinstone College, the Parsee Benevolent Institution (established by the generosity of Sir Jamsetjee Jejeebhoy), and a variety of hospitals, all apparently very well conducted, which deserve mention. As far as illness is concerned, I learnt that scarlet fever is unknown in Bombay, except when imported by British sailors, and of course any introduction of that nature soon passes away. But its place is taken by the prevalence of malarial fever. Pulmonary diseases, *i.e.*, bronchitis, asthma, &c., appear mostly after the rainy season or monsoon, but disappear when the sunny, fine weather which follows has prevailed a few weeks. From November almost to June no rain will fall in this province, and accordingly you see tents pitched on all available open spaces, and they will be inhabited by whole families until the next wet season comes on. House rent is very dear in Bombay; but even these plots for tents are not cheap, especially when they have nice little tennis-courts attached to them. Many officials live in them, and, in the more favoured localities, have only to turn out of their tents to listen to regimental bands or to walk on broad expanses of greensward.

Most of the higher officials and rich English, and, indeed, native merchants, live on Malabar Hill, which rises above the city, and forms a background to, and shelters and overhangs, a splendid bay to the north. Here they live in lovely "bungalows" open to the sea breezes, overlooking the Indian Ocean, surrounded by "compounds" (or gardens), filled with the most lovely tropical shrubs and plants, palms, aloes, and plantains. Beautiful creepers and fuchsias abound, and bougainvillias hang in splendid flowering garlands from tree to tree. Some of the Parsee and Hindoo merchants build even more substantial homes for themselves in this favoured locality—small private palaces; but they know that they are not birds of passage, and are here to stay.

I am afraid that there is not much social intercourse between the English and native gentlemen, and there are, I fear, as is usual, faults on both sides.

Native gentlemen—Hindoo, Mohammedan, or Parsee—who have been to Europe, and are conversant with European habits and manners, feel indignant at the exclusiveness practised towards them, and the at times insulting experiences which they have to endure. For example, no native gentleman is eligible as a candidate for admission into the Yacht Club (a club situated in a beautiful position overlooking the magnificent harbour, and yet quite handy to the central business portion of the city for European merchants, bankers, brokers, &c.); and by a special rule he is not only ineligible, but, by some byelaw, is not allowed to come upon the club grounds or to pass the entrance gate, to see any member whom he may wish to meet for a word or two. Another case: A Mohammedan gentleman, who had passed twelve years in London, and is a man of high position as a barrister—of good family and wealthy—goes to an hotel in Poona and asks for a room. He is at once met by the landlord telling him "he can have a room"—(and that is only conceded because he knows how important a position the Mussulman gentleman occupies)—"if he will take his meals alone in his rooms," because, if he eats in the public dining-room, it would prejudice the hotel in the eyes of Europeans and damage the landlord's interests and connections. An engineer, whom I met at

BOMBAY.

Bombay, told me that he was staying at an hotel with a certain English colonel and his wife, and one day chanced to ride back from some engagement in a carriage with a Hindoo gentleman. The colonel saw him from the verandah, and said at breakfast, "Why did you ride in the same carriage with a native? I would have driven alone in a carriage, and let him follow me in another one." The opposition to Lord Ripon and the Ilbert Bill, which was tremendous from the rabid, bitter Anglo-Indian section of society out here, was another proof of the existence of race antipathy. I do not want to exaggerate the feeling. I have merely given one or two facts, from which anyone can judge of the real state of the case. I am bound to say that the natives, by adhering to their strong caste injunctions not to eat food with anyone of a different caste, and, therefore, much less with Europeans, or, indeed, to touch food prepared by cooks of an inferior caste to themselves, have much to answer for on their own account. An Englishman's first idea on coming out and being introduced to a Hindoo gentleman would be to ask his newly-acquired acquaintance to dinner. But he is met by the apology that his friend's religious "caste" belief will not allow him to accept it. It is rather a severe shock for an Englishman who considers himself "as good as anyone, only rather better." A certain number of native gentlemen, cultivated men, are anxious and willing to throw off the shackles of the past and of caste, and meet and eat and mix socially and sociably with Europeans. Ought it not to be our duty to assist them to the best of our power? I do not say that we can expect any resident European to ask to his house, and to introduce to his family or to his club, any Hindoo or Mussulman who has not the manners and cultivation of a gentleman; but I do say, why not do so whenever the proper and necessary conditions of education and breeding are present, and thus encourage native gentlemen to acquire refinement and fine manners, when they do not possess them already, which many do? This is the school in which our young aspirants for civil posts in India should be encouraged to study. When they reach India, they are, at a comparatively very youthful age, vested with very great powers and responsibilities, as magistrates, &c., &c., and it is a pity when, on coming out to India, their young and impressionable minds are prejudiced against the "natives" by some old official weary of India and anxious to return to England for good. Yet this often happens. The short passage home by the Suez Canal instead of by the Cape enabling Indian officials, civil and military, to run oftener "home," has contributed to a certain weakening in the official mind of its former tendency to look upon India as its permanent home and centre of interest. No doubt there are hundreds of officials who nobly do their duty, without fear or favour, and in the most kindly spirit, and to them all honour is due. The question is whether their number is or is not diminishing. I have not sufficient knowledge to decide, but I fear so, and it is evident with twenty-one young Indians studying at Oxford and twenty-one at Cambridge, and considerable numbers preparing themselves in London for the law and civil service examinations, that cultivated gentlemen of Indian birth and European education will become a considerable factor in Indian life, and may make a revision of the social position they are allowed to take absolutely necessary, however distasteful such a course may be to Anglo-Indians of the more narrow type of mind. I am bound to say that some resident Englishmen I have met certainly have no ill-feeling against our Indian fellow-subjects, and are willing to, and do, treat them in a considerate and a kindly manner; but social laws are very strong here, and a European resident would risk being ostracised if he were to swim against the stream, and mix freely and sociably with native gentlemen. Then the position—the very inferior position—which woman occupies in Hindoo and Mussulman families is a serious hindrance to much friendly communion. She is practically, amongst the higher classes, secluded from the world, and especially denied any contact with men who are not her own immediate relatives. There is no doubt that even in cases where the husband of a Hindoo married couple is educated, and has refined, intellectual tastes, his wife remains usually a century behind in mental power and habits.

The increased facilities for female education in the primary and higher schools will do something in time to rectify this disparity in intellect and tastes, but at present the intelligent Hindoo and Mussulman is heavily handicapped, by want of education in his wife. I am here to note facts, not to pay compliments or state methods for altering the facts. Some good signs are present. There is an awakening spirit all over India, but the time of rapid change is not yet. The Parsees have emancipated themselves from the fetters of custom far more than their fellow Easterns, and are advancing in every way. Indeed, some of them are even copying Europeans in their follies, wear the latest Paris fashions, and are really "too, too English, you know," and don't recognise anyone who is "not in English society, you know," &c. Hindoo ladies and women wear little clothing below the knee, and their feet are covered only with velvet or embroidered leather slippers, while their mental vision and circle of interests is most limited; but there is a remarkable and beautiful look of candour and purity in their eyes, from their very ignorance of the world and its ways, which is very touching and attractive. Much remains to be done, and much can be done by sympathy and encouragement from their more favourably placed European sisters in widening their intellectual horizon. Much indeed has been done in this direction by refined ladies of tact and affection for their sex, such as the late Miss Mary Carpenter, Lady Reay, Lady Ripon, and others.

THE ELEPHANTA CAVES.

Of course we visited the caves of Elephanta, famous for their old carvings, in the Bay of Bombay, defaced, alas! by time and the Portuguese.

And now let me describe our visit to the Gaekwar of Baroda. Bombay was bathed in the most delicious silvery moonlight as we bade good-bye to our friends at the Colaba station, and many a lovely peep we had as we crossed the bridges which connect the Island of Bombay with its sister island of Salsette, and Salsette again with the mainland. We sped along in the luxurious first-class compartment, as large as two compartments in an English railway carriage, and had scarcely time to scramble into our clothes in the morning before the train drew up at the Baroda platform—the garlands with which our Indian friends had decorated us, at parting the evening before, looking rather tawdry in the grey morning light, though still fragrant. We were received by the Dewan (Prime Minister) of Baroda, and the energetic Mr. Dinshaw Talyarkhan, the Chief Commissioner of Public Works to His Highness the Gaekwar—or Guicowar, as it is sometimes spelt. We stepped into an open victoria, with coachman and servant in the princely red livery, and drove in the misty morning through the town, accompanied by our distinguished friends in another carriage. We could see that we passed fine buildings—the College, the Mayo Hospital, the Board of Works of Baroda, &c.—but also we perceived that the side and even the principal streets were not in unison with the fine boulevards and buildings which we observed on leaving the station. This seemed to show that Baroda was in a transition state, and such we found, later on, when we had penetrated into the tangle of dusty lanes of which the city consists, was actually the case.

We alighted at the "Guests' Bungalow," which had been the house in which the reigning prince had lived whilst studying for the duties of his position. It had had far more distinguished guests than ourselves within its walls, amongst them Lord and Lady Reay, and many a Rajah and Nabob of high and low degree; but no one could have enjoyed their stay more than we did, or possibly have seen more in a three days' visit. It is a square building, one storey high, with a pretty stone verandah in front, covered by a wide stone arched way, under which carriages drive to set down their occupants. Graceful shrubs stood in pots on the steps and under the arches; around were pretty gardens and open grass-sward.

A troop of horsemen were exercising round a tree in the middle-distance as we arrived, and made the scene very like those one sees in the French Salon of "A Moorish Vedette," or some other analogous subject taken from life in Algeria.

We learnt that we were graciously to be received in audience by his Highness in the afternoon, and meantime we recuperated ourselves for the fatigues of the night journey by a short siesta, as a preparation for a visit to the gaol, *en route* to the palace. The delicious coolness of the main saloon or audience-room of the bungalow soon refreshed us, and we started to visit the prison. Now, from the care bestowed upon prisons and the more or less advanced system employed to reform the prisoners, one may often accurately judge what the real desires of a ruler are, and what state of advancement his government has reached. I am glad to be able to record that the prison of Baroda is governed on modern principles, and does honour to the State and its ruler. It contains now between 500 and 550 prisoners, whilst formerly its inmates numbered some 700—a very large reduction in about 10 years.

I cannot go into the full history of this interesting native State; but my readers will remember that the former Gaekwar was deposed, after a patient and impartial trial, for gross misgovernment and repeated alleged attempts to poison Colonel Phayre, the English Resident, through the latter's servants. The present Gaekwar, who was a distant scion of the reigning house of Baroda, was at the time of Mulharrao's dethronement being brought up in an obscure way at a village far from the capital. He is a very enlightened ruler, sincerely anxious for the progress of his people, and always devising new schemes for their advancement. Amongst other things he has recently established a very well-appointed Technical School in his State.

There are many things in Baroda interesting to the sightseer, such as the Crown jewels—consisting of diamond necklaces, ropes of pearls (one of them with pearls as large as pigeon eggs, said to be worth £100,000), silver and gold cannon wonderfully carved and jealously guarded, and the royal stables, which contain Arab and Australian horses, state bullocks, and silver and gold carriages of state, very gorgeous in character.

Perhaps a visit to the elephants' compound is the most novel and truly Eastern sight. The elephants are so different from those at the Zoo. Here they are at home and happy, wear woolly hair on their foreheads, have their trunks elaborately painted with gay designs, which look quite appropriate with the bright sun always shining in the heavens. The great beasts flap their ears like sails, and seem, as they bear down upon you in the streets, like great men-of-war sailing along ; and then they are so intelligent ! In Cashmere the cows and dogs lying in the streets never even get up when an elephant comes along, sure that the clever beasts will pick their way over their prostrate forms without touching, much less injuring them in the least. At Baroda they go through wonderful performances—fence with their drivers with sticks, the combatant on each side defending himself with a leathern shield, strapped on the man's arm in one case and on the animal's trunk in the other. Occasionally an elephant turns "rogue," and then the handsome spearmen with long lances (and scarlet coats with yellow turbans as livery) have hard work to keep the refractory animal within bounds.

We were favourably impressed here and elsewhere in India by the kindness of the inhabitants generally to the brute creation, a virtue largely inculcated by their various religions. Everywhere the animal world seems to be on the most friendly terms with man. Squirrels, with striped coats and long tails (not so bushy as our squirrels), play about in every corner, flit about the brass-worker at his toil or the child at his game, without the least fear. Green parrots fly screaming from tree to tree ; the pigeons scarcely make way for man, so sure are they of immunity from harm. This kindness to animals might well be copied by us, and its existence in India gives unfeigned pleasure to all those who are friends of the furred and feathered tribes, with their winning ways and beauteous forms. Of course their are exceptions to this rule, and one sometimes sees overworked horses and bullocks in India as in other countries.

Our short stay at Baroda was terminated by a reception at the Guests' House, which some of the principal officers of state attended, amongst them the Commander-in-Chief—the Gaekwar's eldest brother—the Dewan, some professors, and many others. They were a very distinguished-looking body of men, and the Prime Minister is very intelligent, and speaks English, as indeed the majority do, quite fluently.

Our stay at Baroda was in semi-princely quarters. At Ahmadabad we took up our humble abode in a room at the railway station. Such is life ! Our experiences were a true picture of the East, where one finds a dusty hovel next door to the Maharajah's palace. But I don't wish to insinuate that the Ahmadabad railway station is a hovel, and one is so tired with travelling and sight-seeing that no amount of whistling by engines or chattering by natives is sufficient to disturb one's rest. Yes, certainly the natives do indulge in a considerable amount of animated conversation before they settle down, for they are always packed like herrings in a barrel in every train. At all hours of the day and night they are crammed and jammed into the third-class carriages, as is the case with us on the lines to the Crystal Palace on Bank Holidays. The native bears it all philosophically, runs about with the major part of his wardrobe on his back or done up in wonderful packages, from which the mouthpieces of pipes, or necks of huge teapots, protrude.

Ahmadabad does not require much elaborate description. On the whole it is a great improvement on Baroda ; has evidently more manufacturing resources, wider streets, finer monuments, and a finer position on the Sabarmati river. It lies on a plain ; but where the rainfall is sufficient, such a situation often means greater facility for carrying on agriculture, and therefore more wealth, and wealth fosters enterprise. One of the indigenous trades of the city is wood-carving in the exquisite detail with which we are familiar, or can become familiar, by a visit to South Kensington Museum. We visited one workshop and saw how cleverly the workmen, with rather primitive tools, and using their feet almost as much as their hands, turned out marvels of intricate design. Photographs were shown of a house in New York which had been entirely furnished by this Ahmadabad firm—all in rich Eastern work. Panels, wood-work, mantelpieces of entrance-hall, dining-room, and drawing-room, all were sent out in numbered pieces, and put up " on the other side of the water," as the Americans say. There are not a few cotton mills and a silk mill or two in the city, but much beautiful work is done on hand-looms, also of a primitive nature, by families working at home. These are chiefly cloths of rich silk, and gold and silver thread, and are very handsome. If you do become the possessor of any of them, it will only cause you pain when you pay for them—for afterwards they will prove " things of beauty and a joy for ever."

Besides these greater industries are a thousand other ones, carried on in the open street, for the edification of the passers-by. Dyers, ropemakers, confectioners, tailors, goldsmiths, shoemakers, &c., &c., ply their trades unceasingly, without any thought of " eight hours bills " or limitations of personal liberties. However, there are in some ways more limitations than with us, for there is a separate caste for every trade, and the dyers have been dyers for generation after generation, and the professional beggars have been beggars by profession from time immemorial. Very busy every worker seems, and very contented and happy, in spite of poverty ; for in this warm climate, and with the vegetable diet strictly enjoined by his religion (for the great majority of castes), his wants are few. No doubt in country districts there must be great want, privation, and chronic semi-stravation, and in the large cities and towns much abject and crushing poverty ; but the impression which fixes itself on the mind of the mere visitor is that the poorer classes are, on the whole, better off and more contented than with us, and the look of anxiety as to where the next meal will come from, which is noticed in the London " East-ender," is absent in India.

I confess that, so far, we are somewhat disappointed by the aspect of the country when once the seaboard is left well behind. Especially the route from Ahmadabad to Jeypore, right across Rajputana, seems anything but fertile, and the eastern provinces of India—*e.g.*, Orissa, the seat of the late famine—are still more arid and unproductive. Yet it is wonderful to note the efforts which are made by the people to wring everything that is possible from the ungenerous soil. Wherever it is practicable, wells are sunk, and from morning to night the patient bullocks draw the fertilising element from the bowels of the earth, which is distributed by a thousand little channels to the thirsty fields.

From the carriage windows one notices the wide plains, with tall hedges and tufts of pampas grass, dividing fields of pulse and other grain, diversified in warmer and well-watered districts by cotton, Indian corn, tobacco, and sugar-cane. Occasionally one catches a glimpse of antelopes and black buck in the distance, while partridges, peacocks, and pheasants are too tame to pay any heed to the passing train.

From Ahmadabad our next halting-place was Ajmere (also in Rajputana), the site of which very much excels in beauty that of the former city, for behind Ajmere rise fine hills, with old forts crowning their heights ; and walls, running down the ridges from these forts, in order to give a protected way of retreat for the defenders of the city in case of dire necessity. We were taken for a drive in the early morning, and visited amongst other objects of interest the public gardens. Here you mount a flight of marble steps, and quite unexpectedly find yourself on the shore of the Lake of Anasagar. Right away from the terrace upon which you stand it stretches to the hills opposite, which are mirrored in its bosom. Flocks of wildfowl rest at the further edge, and near where you stand, on various slight elevations, are charming bungalows inhabited by English officials. It is a fairy scene of loveliness, all the more beautiful from its existence being quite unlooked-for. Outside Ajmere stands the Mayo College —a fine institution—in its own extensive grounds, surrounded by the bungalows of the masters, and still more gorgeous buildings, in various Eastern styles of architecture, to serve as the homes of many of the students, who are sons and relatives of the native princes of India—such as those of Gwalior, Ajmere, Kotah, &c.

A few hours by rail from Ajmere brings us to Jeypore—a state like that of Baroda, ruled by a native prince, under the supervision of the British Resident. If report speaks truly, the present ruler of Jeypore is not so enlightened a prince as the Gaekwar of Baroda—more inclined to grosser pleasures, and therefore less occupied with the advancement of his subjects. However, that sort of a prince is not always disliked by the powers that be in India, it is said, as they are more easily amenable to advice from the Resident, and have less spirit of independence.

Jeypore, we have been told, was one of the finest cities in the native states, and so it may be to native eyes, for it has one great broad street running from east to west, intersected by two equally wide streets running at right angles to the first, the busy pavements of which are crowded by picturesque throngs from morning to night, and especially in the morning and at night. But the straightness of the streets gives an air of stiffness, and the park, with its museum, was too English to attract us in the East, where one looks for Oriental achitecture, plants, and tanks, and is not anxious to be reminded of Sydenham or the Alexandra Palace. Salmon pink is the prevailing colour of walls and buildings in Jeypore, and they are decorated with white pencillings, which make them look unreal and like huge birthday cakes, with white sugar lines upon them. The palace is also a great pink building, with tawdry decorations and rubbishy European furniture, reminding one of the large buildings at suburban tea gardens, an impression which is intensified by the strains of a European band playing in the gardens below the Zenana, or part of the palace inhabited by the ladies, who are pretty numerous—about 200, it is whispered—within these well-guarded walls.

But a wholly different effect is produced by a visit to Amber—the seat of the old city. In ancient times it was the custom to change the site of a city every 500 years, and Amber is the ancient site of Jeypore. It is situated on a range of hills outside the town, and the trip begins in an Eastern manner, because one has to mount up to the heights on elephants. It requires a good hold on the howdah to prevent one being thrown backward as the huge beast gets on to his fore legs, or forward as he raises his hind legs, but once in motion he goes well and steadily. From Amber one bears away a vivid recollection of beautiful wooded gorges, charming lakes with islands in their midst, and gorgeous audience halls, in palaces which command lovely views over hill and plain ; but it is difficult, if not impossible, to reproduce such impressions by words, and I must leave them to the more or less brilliant imaginative powers of my hearers.

As to the all-pervading dust of Jeypore, I am glad that you cannot imagine how horrible it is. It makes one's throat parched and one's eyes smart, only to think of it ; and owing to its presence we could scarcely enjoy the odd medley of vehicles we met on our road from the hotel to Jeypore and back. Some were drawn by bullocks, some by buffaloes, and some by donkeys and horses. One, especially smart, is characteristic of the country. It is like a beehive in shape, draped with bright-coloured cloth, on ponderous wooden wheels, drawn by fine, large Indian bullocks, with their, to our eyes, picturesque humps. Inside ride one or two equally decorative native merchants. But I must not forget our Indian dinner-party. We were at least ten guests, but our host could not eat with us at the feast owing to the prohibitive rules of his caste. He looked on, however, and encouraged us to try the various dishes, all of vegetables, different grains or fruits, with or without sugar or curries Our host did us the especial honour, in Eastern fashion, of handing to us some of the dainties in his own fingers.

The journey from Jeypore to Lahore—the capital of the Punjaub, and the centre of administration for the Lahore division and district—*viâ* Ferozepore, is very similar to that from Baroda to Jeypore. One passes wide expanses of plain, more or less cultivated, and stops at stations of very fair size, at which the same bustle and hurry-scurry of the picturesque labouring population takes place, although, since towns or villages are not generally visible from the train, it does not always seem obvious whither the passengers who get down will betake themselves. The country, quivering with heat and apparently pathless, does not look inviting to our eyes ; and we are glad to remain in the carriages, fortified by fruit and iced soda at frequent intervals. But at Lahore there was not much need of cooling elements, as the weather was delightfully fresh and the atmosphere exquisitely clear. Lahore, like most Indian cities, is surrounded by fine suburbs, containing good roads or boulevards, with noble shady trees on either side, though the native town leaves much to be desired as far as cleanliness and regularity of structure are concerned. However, art often gains by what offends against good municipal laws. Although Lahore is so near the north-west frontier—it is only about 24 hours' journey from Lahore to Peshawur, and ten miles from Peshawur to the celebrated Khyber Pass—yet I do not intend to weary my hearers with any account of the defences of that frontier.

I will only quote one short passage from a recent work on India by Sir John Strachey, in which he speaks of the precautions taken to guard against a repetition of the Indian Mutiny, which would probably be more disastrous to the true interests of the Indian population generally than it would be to the English people, who are, in many cases, now looking to Africa as much as to Asia, for a field for the superabundant energy of their surplus [population. Sir John Strachey writes as follows : ' After the Mutiny was quelled it was decided that the proportion of native to European troops in India should never greatly exceed two to one, and that the field and other artillery should be exclusively, or almost exclusively, manned by Europeans. Now at present, if all the fortresses are not manned by Europeans, the heavy batteries and all the batteries of field artillery practically are. The two principles are therefore maintained of keeping an overwhelming force of British troops in the country and of keeping the artillery in the hands of Europeans. Our troops, before the Mutiny, were scattered all up and down the country in small detachments, and it was difficult for them to support one another, and difficult to move them from one point to another. It took from three to four months to move troops from the seaboard to Lahore ; now it can be done in a week. Reinforcements from England can come in thirty days, *viâ* Suez Canal, whereas formerly it took three months, round the Cape of Good Hope. Again, English troops have breechloaders (and will soon have repeating or magazine rifles), whilst native troops of native states—as those of Afghanistan, Nepaul, Gwalior, &c.—are chiefly armed with smooth-bore rifles. There are now, roughly, some 17,000 miles of railway open, so that a concentration of troops. on any threatened point could be effected rapidly, and any mutiny quelled before it had had time to become dangerous. Since 1858 more than thirty millions of pounds sterling have been spent in military work in India, in putting the north-west frontier in a thorough state of defence, and in providing good barrack accommodation for the troops, military railways, &c."

Through the improved barrack accommodation the death rate amongst the soldiery has been reduced from 69 per 1,000 (which was the average for 40 years ending 1856) to 19 per 1,000, and even, in exceptionally-healthy years, to 15 and 11 per 1,000. There is no part of British India where the people habitually carry arms, and the occasions are rare (perhaps two or three per year) when, in consequence of disputes betwixt Hindoos and Mussulmans, they are called out to assist the civil power. As the population of India exceeds that of the five great Powers of Europe, this is a great testimony to the success of British rule, and to the quiet character of the great majority of the people. It is said sometimes that we have to dread attack from the intriguing Hindoo—not from the man of the hills, who is as hardy and warlike as you please ; and we have found this to our cost in many a bloody battle and border skirmish with Sikh and Pathan. But as far as my experience is concerned, in all our conversations I never heard a word of disloyalty breathed to the English Government or to the Queen. On the contrary, the loyalty is sincere, because it is felt by all peaceable citizens that British rule is, "for better, for worse," an accomplished fact ; that to rush into the arms of Russia would mean oppression, abolition of freedom of the Press and of personal liberty ; and that a return to "native rule" would mean a permanent reign of terror, and the thousand nameless horrors of government by, in many cases, debauched and ignorant men. The advisability of either of the two latter alternatives is not entertained by any man who has anything to lose. At the same time, it may pass through the mind of the warlike Sikh that if looting is to be the order of the day, and a general row takes place, he would probably come off as well or better than his more peaceful neighbours. Our greatest and best defence must be in the loyalty and goodwill of the vast population over which we rule, and these can best be secured by creating a real sympathy and good understanding betwixt the educated natives and Anglo-Indians of all classes, civil, military, commercial, and professional.

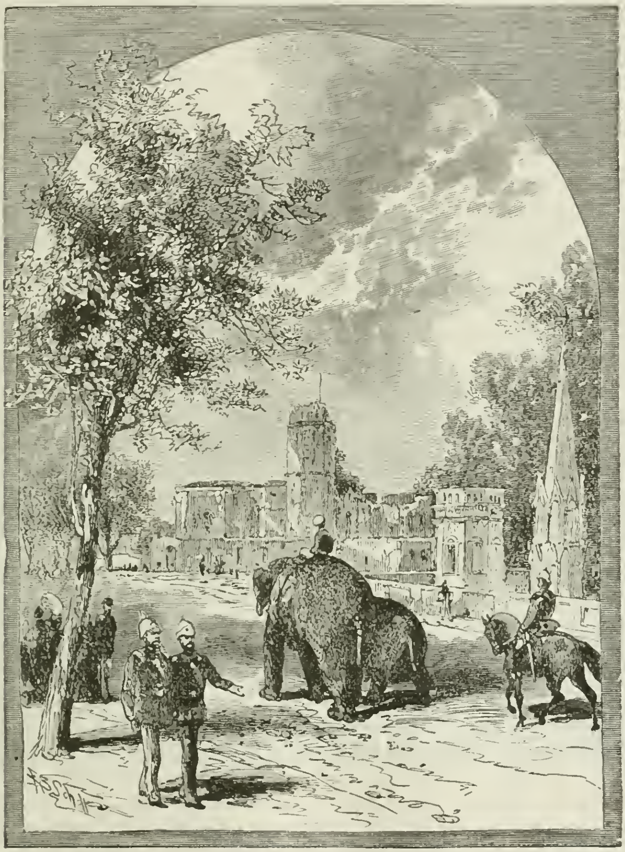
From Lahore to Delhi was our next change, but we stopped for three hours *en route* to buy some shawls at Amritsar, and have a peep at the Golden Temple, one of the most beautiful objects in India, situated in the centre of a huge tank, and connected with the tank by a marble bridge.

In Delhi, the Jama Masjid, or Great Mosque, which is an imposing pile, is the first place to be visited. It was built by Shah Jehan in the fourth year of his reign, and was completed in six years. From almost all parts of the city it is visible, for it stands high on a rocky plateau, with lofty minarets of marble and sandstone in alternate strips. One has to mount many steps to reach the vast central, open court, 450ft. square, at one end of which stands the mosque in all its vast proportion of lofty archway and the three crowning domes of dazzling white marble. In size and magnificence the Jama Masjid is without rival amongst mosques, and from its minarets the most extensive views of Delhi may be had. In the environs of the city are several mosques and temples in fine repair, and numberless others in a ruined state. An imposing feature some miles from Delhi is the Minar Tower, built, it is said, by Chutab-ud-din for his daughter. The legend runs that she expressed a wish to be able to see the waters of the river from a country palace outside Delhi. As the Jumna was eight miles off, this could only be accomplished by building a high tower. Her whim was satisfied by the construction of the Minar. It is a fluted tower 238ft. high, built of red and yellowish stone in alternate layers. In the Fort at Delhi are beautiful audience-halls of the Mogul emperors, made of marble inlaid with precious stones, agate, lapis lazuli, &c. A small mosque, called the Pearl Mosque, the baths, and seraglios, are also of marble inlaid with mosaics, and often perforated in the most beautiful arabesques. During the Mutiny many of the mosaics were partly destroyed by the Sepoys, who hacked out the precious stones with their bayonets, but enough remains to speak of the past splendour of those barbaric times.

We reached Agra from Delhi about five in the evening, but had been aware some little time before reaching Agra Fort Station of a wonderfully beautiful white-domed building on the left of the line, which we gradually recognised, as it became more distinct, as the world-renowned Taj Mahal—the magnificent mausoleum erected by Shah Jehan to the memory of his favourite wife, Arjamand Banu. (See page 170.) Of course we visited it before leaving Agra, and found it charming, with its pure white dome standing out against the deep blue of the sky, and contrasting with the lovely tropical foliage at its foot. Round the pure arched façade some really lovely mosaic traceries, reduced by height and distance to their proper function of relieving the dazzling effect of so much white marble, have been most cunningly and artistically introduced.

At the railway station we were met by a number of Hindoo and Mohammedan gentlemen, who accompanied us to our hotel, after a formal introduction on the platform, and under their able guidance we visited the sights of Agra ; but as the Fort in that ancient city is almost a duplicate of the Fort at Delhi, on an enlarged scale, I do not propose to devote further time to a description of it. Our friends arranged a delightful excursion for us to the now almost deserted city of Fatepur Sikri. It has now about 6,000 inhabitants, but in its prime may have had more than twenty times that number. It was built by the great Akbar, the real founder of the Mogul empire who reigned for fifty years, covering about the same period as that during which Queen Elizabeth sat on the throne of England. I will not describe in detail the numerous mosques, courts, audience halls, stables, tanks, zenanas, &c., which Akbar erected on the summit of the hill upon which the town stands, and which commands a splendid view over the fertile plain on every side. The gem of the whole is the tomb raised by Akbar to the Sheik Sulim Chisti. It is of marble, exquisitely chiselled and perforated, looking like the finest ivory. Inside the tomb one notices numberless little threads of silk and wool and cotton tied round the tracery of the marble windows through which the tomb is visible. These votive offerings are placed by women who wish for male progeny, and are withdrawn when their prayers are answered by the birth of a son. In the evening we drove back twenty-three miles to Agra, through a country swarming with game. Some wild boars furtively crossed the road, and we noticed one or two jackals, wild peacocks, pheasants, and duck, herons, and storks without number.

From Agra our route lay through Cawnpore to Lucknow. Two hours' enforced stay at Cawnpore sufficed to enable us to see the park and memorial erected to those who fell at Cawnpore during the Mutiny, not only English soldiers, but, alas ! women and children, who were murdered by the furious Sepoys. The victims were thrown the dying and the dead together, into a well, and it is on this spot that an octagonal Gothic wall has been placed, and in the centre the figure of an angel with arms crossed in white marble, by Marochetti. It is not a very first-rate work of art, and we were more touched by the simple resting-places of others who were buried in a tiny graveyard adjoining. Their graves are covered by clustering roses, and singing birds chant vesper songs over them at sunset. But it was at Lucknow that the sad story of the Mutiny came before us most vividly, for it is indelibly associated with the gallant deeds of Sir Henry Lawrence (who died at the Residency, into which the besieged crowded for safety), of Sir James Outram, who defended, and Sir Henry Havelock, who relieved Lucknow for the first time, and Sir Colin Campbell, who did so a second time. The Residency was not exactly the building one would have chosen for defence, as it consisted of two or three disconnected groups of buildings in a large garden, and never had sufficient men inside adequately to protect so large an enclosure. Of course, earthworks and batteries were hastily thrown up, but the external mound, we were told, was not much more than 8ft. high. The chief merit of the place was that below the principal buildings were some lofty vaulted cellars, which afforded protection to 250 women and children, who lived cooped up in that confined space for five months and twenty-five days.



IN LUCKNOW.

Sir Henry Lawrence was killed by a shell five days after the commencement of the siege. His grave lies near, in the cemetery, and bears upon it the simple inscription which he desired to be placed on his tomb—

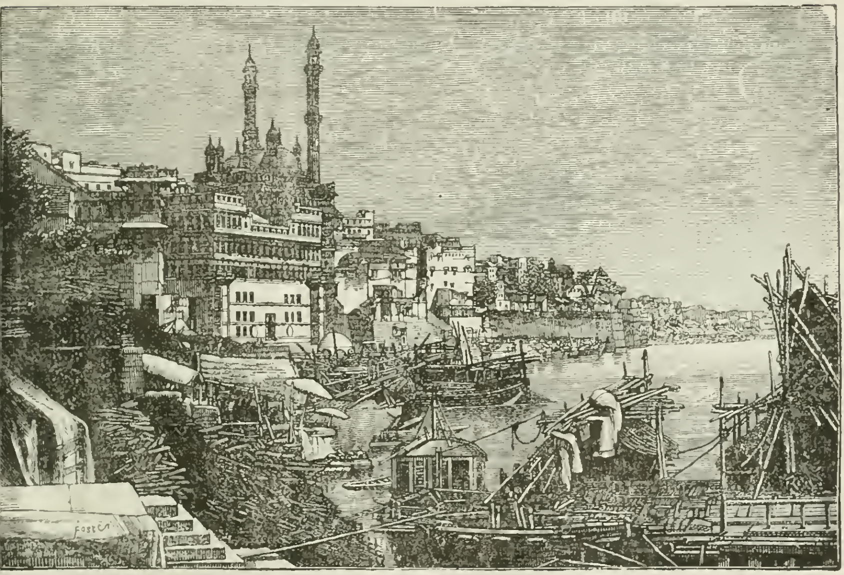
Here lies
HENRY LAWRENCE,
"Who tried to do his duty."
1806—1857.

It would take up too much time to narrate all the events of the gallant defence and of the heroes and heroines who figured in it. "It was wonderful," as one of those who went through the awful experience wrote, "to see what calm courage and endurance frail English ladies could show during that fearful time, when each day threatened to be their last upon earth."

In Lucknow live many reduced families of the ancient Nabobs of Oude. Now, if report speak true, some of these families, and their hangers-on, are not only not models of propriety, but have the reputation of being much demoralised and degraded in their tastes and habits, and opium-smoking has given the *coup de grâce* to many among them. Opium-smoking is *par excellence* the vice of the vicious, and the incentive to licentiousness; but in that it does not differ much from alcoholic drink, when taken in excess. From all accounts, however, opium causes a deeper degeneration of mind and body, and, if my informants are to be believed, in many cases is the immediate cause of madness, and often of distortion of the limbs and countenance. I was especially anxious to learn what was thought in Lucknow of this, because whenever opposition is raised in England to the opium traffic, it is always urged that the pictures of physical deformity brought by Dr. Legge and others from China are frauds, and that opium is used to "ward off fever" (which is possibly, under some circumstances, the case), "is most beneficent in its effects," &c. I would set against this the deliberate opinion of my Lucknow friends, that opium is a curse, and the destroyer of honour, health, and happiness. The wealthy Mussulmans who practice it have a room in their houses set apart for smoking opium, and they invite their friends to join them in the stupefying process. The commoner sorts smoke in opium dens, and a visit to one of them is instructive if not edifying. One has to mount an almost perpendicular staircase, aided by a friendly rope, which hangs down for the purpose, and to enter a courtyard, for so it seems, though on the second floor. Under sheds, on three sides, lie groups of three or four men, their heads indiscriminately on each other's laps or chests, and with each of these groups was, alas! a girl or woman, partaking of the same deadening pipe as the men. Every now and again one of the group would raise himself on his elbow, fill the short, open-mouthed pipe with a drop or two of the concentrated poppy-juice, hold it in the glowing charcoal flame for a minute, take a whiff or two, and then fall back again into any easy position his limbs might assume, and enjoy (for I suppose it is enjoyment) the effects of the intoxicating smoke. I asked one smoker, through an Indian friend, if he enjoyed it? "Yes," he answered, "but I wish the Government would stop it!" Another said he "earned 8 pice (3d. or 4d.) a day, of which he spent 3 pice on opium-smoking, and he had a wife and family to support on the balance of 5 pice!"

Abstinence from alcoholic drinks has its advocates it India as in England, and I lent my voice to Mr. Evans one evening in Lucknow, when he addressed a large meeting of students of the various colleges and schools, with the object of inducing them to form a temperance society amongst the students and pupils. A more intelligent set of youths I never met. The Rev. Thomas Evans speaks very forcibly and well—is partly prophet, partly orator, partly actor, and he excels in all three parts. He mixes many clever tales in the vernacular in his discourse, and frequently brings down the house with his happy hits and anecdotes. He said that the excise revenue of the North-West Provinces of India was in 1858 nine lakhs of rupees, to-day it is 57 lakhs. Fortunately, since the agitation initiated by Mr. Caine and others, the Government of India has put down out-stills (which led to much illicit drinking), and the excise revenue of Benares has fallen by Rs. 41,000, and the reduction of consumption is from 800 to 200 gallons per day. The bazaars in Lucknow are very good—full of pretty fabrics, silver objects and jewellery, clay figures, gold and silver wire on bobbins or in cloth, printed stuffs, &c.

But we must not linger any longer in the picturesque, crowded, fascinating streets and bazaars of Lucknow, but push on to Benares, the sacred city of India, where every true Hindoo prays to end his days. It takes its name because it is situated betwixt the Barana and Asi rivers, whence Baranasi, corrupted into Benares, is derived. It is said that the god Shira, when he established his city here, wanted his votaries to remain in the city, and promised salvation to whosoever died within the walls. All the gods were called upon to reside in Kashi, the centre of the city, where no blood could be shed or sacrifice of life offered. They agreed, but his wife Durga refused, because her worship could not be performed without the offering of sacrifice. She therefore took up her quarters outside the limits of the city. At one time thousands of monkeys were fed at her temple, and they lined the walls and trees on the way to the temple for a couple of miles, and occupied every corner of the stonework of the temple. But, alas! they are almost a thing of the past! They proved such a nuisance that quantities have been deported to the forests of the Maharajah of Vizinagram, and others have wandered into the city of Benares itself. A few remain behind, and come when they are called, but they are but the remnants of an army, and the glory of the Monkey Temple has departed for ever! Buddha at one time made Benares his headquarters, and from it sent forth his emissaries to preach his doctrines in China, Japan, and Ceylon, and the distant Thibet, so that Benares is equally revered by Buddhists and Hindoos. The effect of a sail down the holy river in a barge, past the palaces and ghauts, is one never to be forgotten. Slowly one moves down the sacred stream—strewn with chaplets of flowers, votive offerings of the devout. Above rise temples, palaces, platforms, minarets, rest-houses for pilgrims, in tier upon tier, to a dizzy height; whilst at intervals flights of steps, crowded with devotees in every variety of costume, run from on high down to the water's edge. It is perhaps the most entrancing and interesting sight in the world, and almost baffles description. Each different race confines itself, more or less, to a



BENARES.

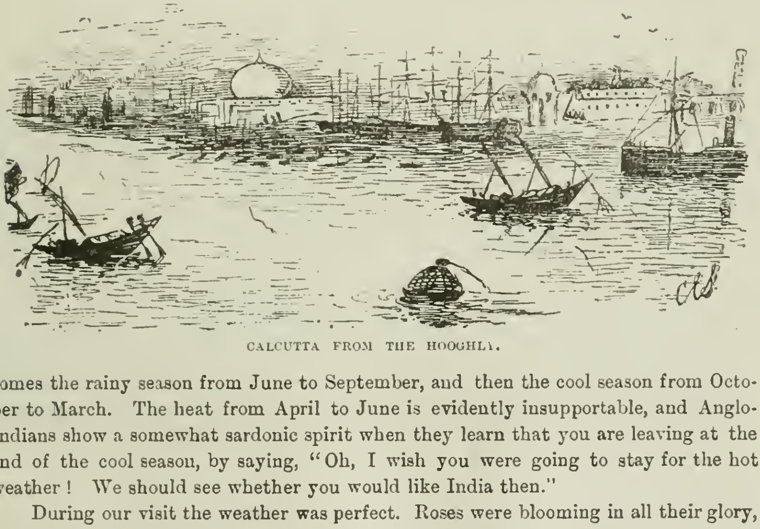
special ghaut or flight of steps, and there performs the prayers or ablutions enjoined by its religion. Every pious, orthodox Hindoo would wish to visit the sacred city as often as practicable, and finally to have his ashes confided to the hallowed waters of the Ganges. I say "ashes" advisedly, because one or two of the ghauts are devoted to the cremation of the dead. These "burning ghauts" are always occupied by one or two corpses, decently clothed in white and covered with flowers and garlands. The fire of rough logs of wood is kindled in the open air, quite exposed to the gaze of the multitudes, who come down at all hours to bathe, and the relatives stand in a group a little way off, waiting until the body has been consumed, and they can perform the last act by consigning the ashes to the stream.

Let me here give the history of the aunt of one of my Hindoo friends, for the truth of which I can vouch, and which will give the reader a glimpse into Indian life. She was left a widow at fourteen years of age. Whilst her husband lay sick unto death she was told to prepare a certain dish for him, but before it was ready the patient died, and she became a widow. She at once registered a vow that as she had not been able to fulfil her duty and cook the meal in time, she would not eat any more cooked food as long as she lived, and she kept the vow religiously, living only upon milk and fruit. This diet agreed with her, however, for she reached the age of 84, enjoying perfect health, and without turning grey. About a fortnight before her death she said she felt that her end was approaching, and that she wished to die in the city of Benares. Her friends rallied her delicately on her apparent good health, but she insisted on setting out for the sacred city, and a few days afterwards her friends at home heard that she was dead. Some little time before her actual decease she asked the relatives who had accompanied her to carry her to the water side, where she in an hour or so expired. It is enjoined by the Hindoo religion that one ought to devote the latter years of one's life to contemplation and to setting one's worldly affairs in order, but of course it is not always easy to arrange to throw off one's mortal coil with as much dignity and precision as this Hindoo lady.

Thousands upon thousands of pilgrims, from all parts of India, visit Benares during the year, and worship at the various shrines. Some, specially devout, follow the waters of the great river from source to mouth and back again ; but this is a rare feat, as it must be done on foot, and is said to require six years forits performance. In Benares, the holy of holies is the Golden Temple, the sanctuary of the terrible Siva, who is, more than any other god, bloodthirsty and cruel, and requires sacrifices of blood. I have omitted to speak of the Ascetics, who hold their limbs continually in one position until they wither and shrivel up, and of those who bathe in the well of Heoling, or Manikarnika—the spot sacred to Vishnu (which is only three or four feet deep and four feet square)—and into which multitudes of bathers descend, and then drink the filthy water, thereby, it is thought, cleansing the bather from all his previous crimes and faults, however heinous they may have been. I have not spoken of these things in detail, because they are nasty ; but they exist, and are practised daily and hourly.

Calcutta, as every schoolboy knows, is situated on the banks of the Hooghly, and is the seat of the supreme government of India. At a first glance it is clear to even the dullest observer that Calcutta is a capital city, by its wide, open grass spaces, fine buildings, and dashing equipages. At Government House the Viceroy, Lord Lansdowne, holds his court in state, whilst the Lieutenant of Bengal (the enlightened Sir Charles Elliott, K.C.S.I.) lives at Belvedere, two miles from the city, across the Maidan. Government House is a stately place enough ; but if I were Viceroy of India I should cast envious eyes on Belvedere, which is a smiling, handsome residence in lovely grounds. The only drawback to Belvedere is its proximity to the Zoological Gardens.

It would be hard for his Excellency, perplexed by some ticklish question of State policy, to be awakened at dawn by some devout bird praising his Creator by an oft-repeated shriek, or to have his viceregal dreams disturbed by the roar of the African lion. In town, of course, he is not free from persecution, since the Bengal crows caw and scream from dawn, all through the day, and almost all through the night, with untiring pertinacity. By-the-bye, in these Zoological Gardens is a celebrated man-eating Bengal tiger, who has killed no end of people, but was so wily that for years he was scarcely ever seen, except by his victims, and eluded every kind of trap. At last he was caught in a pitfall, but he was always an unruly subject. Once a dispute arose between two of the keepers as to whether a lion or a tiger was the stronger. They raised a door which divided the "man-eater" from a lioness, and in an instant the tiger sprang upon her back and killed the lioness by one blow. Now his teeth are getting blunt; still, he looks at one with a curious leer, as if he were fancying to himself how uncommonly nicely one would eat. About Christmas and New Year is the time for all sorts of festivities at Calcutta, for it is the cool season, and though hot enough from eleven to three in the afternoon, yet the mornings and evenings are chilly. Strange to say, the hot weather is the healthy season, for all impurities seem to be rendered innocuous by the burning sun. The hot season is from April to June, then comes the rainy season from June to September, and then the cool season from October to March. The heat from April to June is evidently insupportable, and Anglo-Indians show a somewhat sardonic spirit when they learn that you are leaving at the end of the cool season, by saying, "Oh, I wish you were going to stay for the hot weather! We should see whether you would like India then."



CALCUTTA FROM THE HOOGHLY.

During our visit the weather was perfect. Roses were blooming in all their glory, the sunshine was splendid, the air clear as crystal. But the official world moves off betimes for Simla or Darjheeling, and so they have not much to complain of. The unfortunates are the merchants and judges and barristers and permanent minor officials who remain to swelter in the plains. Whether it is right for the supreme Government to move away to the hills is a grave question. Before railways were introduced everybody remained in Calcutta, and it is evident that there must be a state of suspended animation in the business of government when it is carried on at such a distance. But unless pressure came from England of a very strong nature, there is no probability of a change, as no Viceroy, however strong-minded he might be, could initiate a change, so wedded is the higher official world to the annual migration. In one way it may be an economy, for few officials could bear the strain of many hot seasons, with the responsible work they are called upon to perform.

Horse races are quite an institution of Calcutta, and not the most beneficent one we could have brought with us, for evidently the Hindoo, the Mussulman, and Parsee, all take kindly to racing, and its evil side, betting. Though disapproving, of course I felt bound to see the races, on the same principle that takes everyone to the bull-fight in Spain. The course is on the Maidan, quite close to the city, and crowds line the whole course, look through the wooden palings, and perch themselves, often sitting on their hams (wrapped in their scarlet, or blue, or white shawls), on the top of every imaginable carriage which the wit of man can devise, the most frequent being the ordinary "ticca-garri," corresponding to our old hackney-coach, but more roughly made. In the enclosure and in the grand stand many nations are represented—first, the English, by the Viceregal party and officers of the staff and garrison, added to by stray globe-trotters, some of the business men of Calcutta, brokers, &c.; then the Hindoo race, by sporting native princes or rajahs, some in European and some in all the gorgeous apparel of the East. Another group are Eurasians—probably railway employés or petty officials; and yonder is a grave Parsee, with his sloping shiny hat and spectacles on nose, examining the whole thing from the philosophic point of view, and looking deliciously out of his element. One Sunday we made the regular Sunday trip by steam launch to the Botanical Gardens, about four miles down the river. They are wonderfully rich and varied, and have an admirable curator in Dr. King, himself the successor of many other devoted horticulturists. Except orchids, the flowers do not form a great feature; but the Cuban palms, mahogany trees, deodar trees, and an infinite variety of other tropical plants and flowering shrubs, adorn the gardens and are reflected in the marshy pools. The chief glory of the place is a great mammoth banyan tree, with a trunk fifty feet in circumference, and suckers and feeders as thick as ordinary trees, running down from the main branches. Lovely creepers

CALCUTTA.

cover part of it and make it a handsome monster. Two-thirds were broken-off in a terrible cyclone some two or three years ago. What a splendid creation it must have been then, looking now "so majestical!"

Barrakpur, the country residence of the Viceroy, is up the river, situated in a beautifully-wooded park; and further up still are Chandarnagar (a tiny French settlement), and Hugli, once an old Portuguese settlement.

In Calcutta, "society"—I mean English society—amuses itself much as it does everywhere else by a succession of morning calls, and balls, dinner parties, tennis, polo, reviews, &c.; but as our object was to study Hindoo life and character, we did not see more of the former than a formal reception or dinner party gave us the opportunity of doing. English people in Calcutta are proverbially hospitable, and we regretted not seeing more of them.

Some of our Indian friends arranged for us to meet many of the cultivated native gentlemen of Calcutta, and we had some very pleasant and instructive chats on the various questions which agitate the minds of the more enlightened members of the native communities. Similar opportunities were afforded us at Delhi, Lucknow, Agra, and Benares of meeting well-informed circles of natives, and of acquainting ourselves with the state of opinion among the educated people, who nearly all speak English fluently. The pity is, as was said of the British infantry, that "they are so few." But these 30 to 60 enlightened men in each city form "a centre of light and leading" for the rest of the more backward population, and great honour is due to them for their efforts to advance in the path of educational progress and social reform. They will be constantly reinforced by Indians returning with a university education from England, and some of their views will gradually permeate the masses, it is to be hoped, and assist in breaking up caste and the idolatrous, if poetic, religion of the Hindoo.

There is a growing section of Hindoo society which is adopting European modes of thought and European modes of life, notably those who are members of the Bramo Somaj—a kind of simple monotheism expounded by Rajah Gammohun Roy. Of course, these more enlightened persons are but as a drop in the ocean of superstition which exists in India; but they are being perpetually reinforced by new adherents who have been to England, or who see the advantages of adopting the best modern European ideas and modes of living. India lies in a state of coma, sunk in the lethargy of ages, and the only hope is to introduce the new blood of European civilisation into her veins. What will be the result? Will old race instinct be too strong, or will India spring into new life? Hundreds are in a transition stage; but many fence about the question, unwilling to offend the susceptibilities of the masses. Let me give two pictures of two different scenes from contemporaneous life in Calcutta. This morning I visited the shrine of Kali, or "the Black One," situated about ten minutes' drive from the aristocratic portion of the city. Kali is the goddess of blood, with three eyes and four hands, who sends pestilence and famine, and who wears a necklace of human skulls, and is only to be appeased with sacrifices of blood. At one time those sacrifices were human beings, now they are goats and kids. Every morning until noon the pious throng in crowds to make their offerings—the priests decapitate their victims at one blow, and sprinkle the worshippers with the fresh blood. It is only such sacrificial meat which the true Hindoo may eat. The priest pockets his fee, and the devout person descends to a branch of the Hooghly hard by (also a sacred river) to wash off the pollution. All the beggars and rascals of Calcutta are present in crowds, for almsgiving is enjoined on all. Ladies who may have a child dangerously ill go in disguise and remain on their knees for 24 hours, as a propitiation to the goddess, offering two or four kids. The humbler classes give flowers and less costly objects.

That is one picture. The other is an evening entertainment by the Tagore family at their old family house in the heart of Calcutta. The narrow road which leads to it was illuminated with innumerable little oil lamps and evergreens, palm leaves, &c., and the courtyard was turned into a large theatre, with an exceedingly pretty stage. Lady Lansdowne and suite were present, the Lieutenant-Governor of Bengal and Lady Elliott, and a numerous company of Hindoo and English ladies and gentlemen. The piece was a romantic operetta, entitled "Valmiki Pratibha," or "The Inspiration of Valmiki"—the first Indian poet.

The piece was written by Mr. Robindranath Tagore, who also played the hero, Valmiki, and all the performers were members of the Tagore family or connections. It was admirably given. The part of the hero required the utmost dignity of pose and delivery to sustain it, and Mr. Tagore's rendering could not be improved upon. He has a noble face and a noble presence ; but the minor parts were equally well filled, the goddesses and nymphs were charming and refined, and the principal robber, who played a comic part somewhat after Falstaff's style, would be an acquisition to any troupe in the world. The play was in the vernacular, but a very full English synopsis was given for the benefit of European visitors ignorant of the language. The whole sight was most fascinating from its beauty and good taste and a high English official, who has refinement enough to enjoy it, said it was the most interesting thing he had seen during his 30 years' experience of India.

We have now the problem of India before us—how to extend this cultivation to the upper portion of the Hindoo community, and then gradually, and in a less degree, of course, to the masses—the real worshippers of Kali—those who offer blood sacrifices. Education will do much, and in the course of time legislation must do something also, I imagine.

To be in Calcutta and not to visit Darjheeling would be little less than a crime. It is about as near heaven as one can conveniently get upon earth, in more senses than one. Perhaps the fact that India is, as a rule, so flat and level causes one to rate the charms of the mighty Himalayas at more than their real value. But it is not easy to overrate the grand and peerless peaks, covered with their weight of eternal snows.

Then the route to Darjheeling, and the ascent on the little, miniature, two-foot gauge railway, is so wonderful, that one has no sooner made the ascent and feasted one's eyes on the lofty peaks, and descended to the plain, than one's first impulse is to make up a party and return again to the lovely scenes. How shall I describe the beauties of the scenery as the toy train winds its way up the steep inclines, occasionally twisting round in a small circle like a dog trying to catch his own tail, sometimes going back a short piece of steep line in order to gain impetus to carry the train up an unusually stiff bit, like a switchback railway at Olympia ? At first the line runs through rank growths of cane and jungle grass, somewhat like pampas grass in growth, with blades twenty feet high, and seed stalks with feathery tops standing out ten feet higher ; then through tropical jungle, almost impenetrable, owing to the thickness of the undergrowth and long strands of rope-like creepers, which hang in festoons from tree to tree. This jungle is the home of the tiger, wild hog, buffalo, bear, sambhar-deer, &c.

By-the-bye, we saw in a clearing at the foot of the hills a tame elephant, grazing in a field like a horse or other domestic animal. He pulled the tufts of grass up by the roots, raised his knee, and beat the wisp of green food against it to knock the earth off, and then swallowed it. We heard the swishing sound of the grass striking against his knee, but did not at once understand his clever manœuvre.

Gradually, as one ascends, the foliage changes in character. Beautiful trees stand out, oaks, indiarubber, acacias, fig, &c., with magnificent clumps of bamboo rising fifty or sixty feet high, with their whip-like canes falling round the parent stems in graceful curves, like a fairy fountain of verdure. As one gets higher the beautiful tree-ferns appear, clothing the wooded slopes with a peculiar charm. Here and there a whole hillside is devoted to the growth of tea, and though the plantations themselves are not picturesque, with their regular lines of short, round bushes, relieved by zig-zag paths, leading down from the planter's bungalow, which is always perched on a hill, yet they act as a foil, and prevent one being satiated by the almost overpowering richness of the scenery and foliage. The train twines and twists through villages of the quaintest descriptions ; with the inhabitants quainter still, sitting in front of their wooden huts or shops, from which they could often shake hands with the passengers without moving from their seats. The railway is an afterthought and innovation on the old bullock-cart road, which was the only means of ascent, and which the railway has coolly appropriated and cut up with its rails, curves, points, &c. Bullock carts still bring up heavy luggage and stores and carry down tea from the plantations to the plains. The inhabitants of the villages are chiefly Lepchas, Thibetans, Bhutias, and Bengalis. But the three former tribes are very different from the Babus of Bengal, with their intellectual faces, and shawls wrapped round them like Roman togas, reminding one irresistibly of Brutus, Cassius, and Marcus Aurelius. The others are real hillmen, strong, thick-set, clothed in sheepskin coats or woollens, but all possessing a Mongolian type of face, and making one wish to push on to China and Japan to see more of that fresh class of nationality. There is an air of virile strength about the men which is very refreshing ; the children run about as children should ; and the women are as strong as the men, to judge from the fact that they are politely allowed to carry all the heaviest trunks and packages by their husbands and sons. No secretary of any women's rights association has any cause to complain that woman is not put on an equality with man amongst the Bhutias and Nepaulese.

But to return to our armchairs in the last open carriage attached to the train, from which we can see the magnificent views of distant plains, intersected with rivers, far down the ravines. Through occasional clouds we go, up, up to a height of 9,000ft. above sea level, then turn downwards 2,000ft. to Darjheeling. Then we see towering aloft the snows of Kinchinjunga, some 28,758ft. high, surrounded by his four attendant peaks, all above 22,000ft., which gives them the name of "The Thrones of the Five Genii." It is a glorious chain, and puts Mont Blanc and other Swiss mountains quite into the shade. Sometimes on clear days, from a higher point than Darjheeling, Mount Everest, the highest mountain in the world, is visible, but it is rare to find him without a cloud. He is only 1,000ft. higher than Kinchinjunga.

Darjheeling is a great sanatorium for the English troops in the Bengal Presidency. Formerly it used to be at Jalapahor, a ridge about ten miles from Darjheeling, but so many soldiers committed suicide from the isolation and constant sojourn in cloud-land, that the sanatorium was moved to a lower sphere, and is to be moved to a still lower ridge beneath Darjheeling. Sunday is market day, or bazaar day, and on it the little market-square and adjacent streets are full of peasantry come to sell produce and other wares, and coolies from the tea plantations come to purchase clothes and supplies of food, chiefly grain, for consumption during the week. The chaffering is so great that it can be heard a mile off in the clear air. Most of the women wear wonderful chains round their necks, of beads of agate and other stones. These necklaces support small oblong gold or silver amulet boxes. For a proper consideration these fair ones will part with these treasures, also with their ear-ornaments of turquoise, all very handsome and barbaric. The babies are carried about in baskets, and sometimes a kid is slung, for sale, round the shoulders of some of the boys. I said that the women of the Bhutia tribe are strong. Rumour goes that one woman carried "a grand piano" on her back from the station to the hotel on the hill above, but this is no doubt apocryphal. There is only one drawback to Darjheeling. Every rose has its thorn! It is that after and during the rains the place swarms with leeches.

I must now turn to a more serious subject, and yet one which should be understood by the English at home, because the occasional miscarriage of justice which is alleged by the natives does more than perhaps anything else to irritate the Indian people against our rule. This miscarriage of justice, it is said, comes in only when the race-feeling of the Anglo-Indian portion of the community here is called into play.

Justice betwixt Hindoo and Hindoo, or between Hindoo and Mohammedan, is impartially administered, and no genuine complaints can arise on that head. The natives say that it is when an Englishman is in the dock that English juries—and, I am sorry to say, judges—seem sometimes inclined to lose their heads. Let me refer again to the celebrated Dum Dum murder case, which will show what I mean. Dum Dum is a suburb of Calcutta, and the military lines are there. One night, in the spring of 1890, four soldiers, in a drunken spree, left the cantonments, with their rifles in their hands. But though intoxicated they wanted more drink, and finding grog-shops closed at that late hour, they entered the enclosure of a Mohammedan's house, and found the proprietor sleeping under the verandah. They asked for liquor, but were told that, being a Mussulman of course he had no intoxicating drinks in his house. Then they said that he must come and get them some. They dragged him away, but on the road they passed a pond, and one of the soldiers pushed the poor fellow into the water. Evidence given at the trial went to prove that O'Hara pointed his rifle at the man in the water. His companions, in horror, shouted to him not to shoot. But exclaiming, "There are plenty more of the black devils!" (he used a still fouler word), he fired.

Immediately there was a general *sauve qui peut.* But naturally such an outrageous murder could not be hushed up, and the soldiers were put on their trial. Two turned "Queen's evidence," and O'Hara was condemned to death by Judge Norris, who, on passing sentence, explained the enormity of the crime. But no sooner was the sentence pronounced than many Anglo-Indians raised a tremendous storm. Pressure was put upon the Advocate-General to grant a certificate for a review of the case. Then, on the point that the soldiers' evidence given against their comrades had not been corroborated by any independent evidence, the verdict was quashed. There may be some legal grounds for the plea that Judge Norris misdirected the jury. I am no lawyer, but I leave my readers to form their own opinion as to what would have happened had the murdered man been an Englishman instead of being a Mussulman and a native. The murder took place late at night, and it could only have been by an unusual chance that other witnesses could have been present. Two shots were fired, for two ball cartridges were wanting. Two soldiers gave evidence against their own comrade. And the Mohammedan was dead, of that there was no doubt, with bullet wounds to show how he died. The soldiers in court, when the judgment was given in favour of the condemned, I am told, cheered lustily, and O'Hara was carried home to barracks in triumph. His companions, who had turned Queen's evidence, were boycotted, and had finally to leave the regiment. We must make some allowance for the feeling of comradeship amongst ignorant soldiers in an Irish regiment, but think of the effect on the Indian people of such an apparent miscarriage of justice under the clamour of the Anglo-Indian world.

The case of Mears is also notorious. He struck a postman—a native postman, I need scarcely say—for not saluting ("salaaming") him one morning. The postman prosecuted him for the assault, but was prevailed upon to withdraw the suit. Later on, for having dared to complain, Mears had the poor fellow seized and tied up, and thrashed him so severely that his life was despaired of. For this offence Mears was actually condemned, and, wonderful to relate, imprisoned for three months, amidst a howl of abuse from Anglo-Indian journals. This abuse was even levelled against those judges who heard the appeal and had the courage—the exceptional courage even for an English judge—to reject the appeal in this glaring case. Those judges were the then Chief Justice (Sir R. Couch) and Sir John Phear. On the release of Mears from prison he was offered a public dinner by "high-minded" Anglo-Indian sympathisers, and was feted generally, and gloried in his own "noble deed." All this requires no comment from me.

Now, as I may be told that the impression of the Indian people, that there is some prejudice against them in the courts when an Englishman is the aggressor, is totally unfounded, if not libellous, I will quote what the *Englishman* (a journal which, as its name implies, is nothing if not Anglo-Indian) said in its issue of the 16th May, 1879, with reference to "Jitoo Lal's appeal," arising out of the celebrated "Monghyr" case. Amongst other "pleasing features" of this case, a wealthy man, named Luchmi Das, was arrested by a district magistrate, kept in Monghyr Gaol for twenty days, without having been brought before a magistrate, although the charge made against him under sections 154 and 155 of the Penal Code, was a bailable offence, and the district magistrate admitted later on in the Sessions Court that he "directed that no bail should be taken, and knew that offences under sections 154 and 155 were bailable." But to return to Jitoo Lal's appeal. The *Englishman's* comment was as follows: "We feel bound to add, in the interests of public justice, on which more than anything else the permanence of our government in India depends, that the Judges of the High Court have shirked their duty, and, under the veil of a half-hearted, and indeed most gentle, censure, have attempted to screen one of the grossest perversions of the criminal law that has ever come to our notice."

The *Statesman* (another Anglo-Indian journal), commenting on the same case, viz., the withdrawal of Jitoo Lal's appeal, in its issue of the 20th May, 1879, in a leading article, says: "Jitoo Lal is, unfortunately, a representative man. There is throughout the Mofussil a deep feeling of dissatisfaction with our administration of justice, and this ought to be known and acknowledged, for it is fatal to true loyalty. There can be no advantage in blinking unpleasant facts, in trying to delude ourselves into the belief that the people have confidence in our administration of justice, and *in making our countrymen at home* believe that this is one of the great boons we have bestowed on the people, for which they are truly thankful. The truth is not so. The people have the greatest confidence in our High Courts, and generally, we think, in our session judges, but not in the justice administered by our Mofussil judges." I leave Anglo-Indians to fight this out with the editors of the *Englishman* and the *Statesman*.

The traveller who leaves Calcutta by steamer for the south, unless he has looked at the map beforehand, will probably imagine that a couple of hours' sail down the Hooghly will take him out to sea. But it is not so, and he will be lucky if he gets free of the river in twenty-four hours, and has not to spend a night anchored in mid-stream. However, he will not grumble at this apparent loss of time when it is explained to him that the Hooghly is one of the most treacherous and dangerous rivers in the world to navigate, and that more haste might mean worse speed. It has many shifting quicksands, and is never two days alike, so that the steamer takes the most tortuous course possible, and now heads straight from one shore across to the other, and then back again, as if it were a skater doing the letter S on the ice. During the spring tides—after the rains—in a freshet, a steamer will strike the bottom, and the rush of waters will turn her over in a moment, and down she will go (without it being possible to get out a boat) right into the sand, and it is the pilot's belief that she comes out at the other side of the world—at least so he said, and pilots often speak the truth.

But once having crossed the bar—which is frequently traversed when there are only one or two inches beneath the keel—indeed, sometimes the boats actually jump the bar—danger is past, and, especially in January, the Bay of Bengal and the Indian Ocean are as smooth as glass and as safe as a pulpit.

So we found it on our way to Madras and subsequently to Ceylon. We only stayed a day at the former place, sufficient to whet our interest to return and to understand why it is called the "city of long distances"—a name which it deserves far more truthfully than Calcutta that of the "city of palaces." Lord Wenlock had just reached his new post the very morning on which we entered Madras harbour, and we hurried ashore to see the procession and crowds assembled to welcome him. They were the same crowds as those who so lately bade farewell to Lord Connemara, at the unhappy termination of his otherwise successful and tactful rule, for he managed to gain the confidence of both the native and Anglo-Indian population, a feat which it is not given to every Governor to perform. The heat is very excessive in Madras and Southern India this season (which should be comparatively cool), owing to the scanty fall of rain, and famine on a more or less extended scale must be looked for, or, if not actual famine, great distress, from the failure of crops. Very warm we found Madras, and we were glad to return to the steamer and watch the clever native boatmen rowing about in their dug-out canoes, called "catamarans," formed of two logs of wood lashed together and slightly scooped out. Slight craft they seem, but able to live in the rough sea outside the breakwater.

In a day or two we reached Colombo, and began to view the beauties of that fair tropical isle

"Where Europe amid Asia smiles."

I daresay most people connect Ceylon chiefly with coffee, and lately with tea, and possibly they would have hit upon its most salient feature, for without tea Ceylon would be little or nothing, as far as commercial prosperity is concerned.

If "cotton is king" in some other parts of the world, tea is undisputed sovereign in Ceylon. It was not always so, for until fourteen or fifteen years ago coffee reigned supreme, but was dethroned by the insidious attacks of a parasitical insect, which slowly, but surely, undermined his empire. Coffee is still grown, but the quantity produced dwindles every year, whilst the growth of the tea trade is phenomenal. The total exports from—

			lb.
1st January to 22nd December,	1887	were	12,451,391
„ „	1888	„	22,975,112
„ „	1889	„	32,450,372
„ „	1890	„	44,913,918

They have nearly quadrupled in four years, and have given Ceylon the prospect of retrieving the fearful losses made by the ravages of the coffee disease, which reduced the poor planters from opulence to beggary in a short space of time.

I cannot say that the growth of tea has added much to the beauties of the island—quite the contrary—for planters merely clear the jungle by fire, and leave the charred trunks of the trees to stick out in a hideous manner amongst the low tea bushes, which only stand about 2ft. from the ground. One good thing about the cultivation of tea versus that of coffee is that twice as much labour is required to maintain tea plantations in order, and to pluck the leaves, than is necessary in the production of coffee. Perhaps my readers are not aware that only the fresh green leaves or shoots on the trees are plucked, and that this is done in regular rotation, so that the turn of each bush comes round once every nine or twelve days.

On one estate I visited the tea is plucked, prepared, and "fired" five days in every week throughout the year. When bushes show signs of exhaustion by putting forth poor, drooping, unhealthy shoots they are cut down almost to the bare stem or stump and allowed to rest. In four or five months they are restored by Nature to full leaf, and are ready for plucking again.

When the baskets, fitting on to the backs of the pluckers, are brought in full of the tender, green, but fair-sized leaves, they are loosely sprinkled on the floor of a warehouse, and on layers of canvas suspended one above another, called "tats." Here the tea remains until it is withered—the work of a few hours—and then the leaves are brushed together and sent down by a shoot into a chamber below, where they are passed through rollers, allowed to ferment, and are then fired in an oven, sifted, refired, again sifted (to separate the various qualities), and then packed, *warm*, in tins, after which they are placed in boxes, and are ready for transport to port of shipment.

The finest tea consists of the smallest leaves, which appear at the top of the bushes, and has the most aromatic flavour. It is called "orange pekoe," and is not kept separate, as otherwise the whole quantity from which it was separated would be wanting in flavour. Occasionally, to make a *réclame* for a certain plantation, it is separated and sold at a fancy price. Thus a pound of Ceylon tea was lately sold at Mincing Lane for 85s., and almost immediately afterwards for upwards of £5.

The chief labourers on the tea estates are Tamil coolies from Southern India, with a certain proportion of Cinghalese and Moormen. The Cinghalese chiefly grow paddy, *i.e.* rice, and are peasant proprietors to a large extent, and, as such, do not care to descend in the social scale and become labourers for hire. One cannot say that they are very fond of work, but a large number of them have been compelled by want and the loss of their paddy-lands to work for hire.

This brings me to the consideration of the paddy tax, or tax on paddy-fields. This tax, amounting to £75,000 a year, is raised only on one article of produce, and that, strangely enough, the food grown by and consumed by the poorest portion of the population.

A planter may grow tea, coffee, cocoanuts, cinnamon, what you like, and has no tax to pay, but the paddy grower is charged a comparatively heavy tax, which he is called on to pay in years when the crop may have been an absolute failure. Such a tax on the food of the people is obviously indefensible—at any rate, the burden of proof that it is the only source of revenue must rest with those who defend so cruel, so exceptional a tax, which strikes at the food of the poor and allows all others to go practically free. It is true that a poll tax of R1·80 (about 2s. 9d. to 3s.) is levied on the tea planter and coffee planter; but it is also levied on the paddy grower, as it is a tax to maintain the roads. It is true also that the Government levies an import duty of 7½ to 10 per cent on imported rice, and that this duty is chiefly paid by the tea planter, who has to buy rice for the support of his coolies. But this tax on rice imports is not a protective duty, as Ceylon does not produce, generally speaking, sufficient rice to maintain its population of Tamils and Cinghalese. Now, as a follower of Cobden, I object to import duties on food; but I object still more to a tax on paddy-lands, on which rice is grown, which brings such disasters in its train whenever the season proves unpropitious.

In 1882 the Government in Ceylon, alarmed by arrears in the collection of the tax, were instructed to insist on payment and swoop in arrears, even at the cost of selling the lands of the defaulters. Too well they carried out their instructions which resulted in the destruction of the proprietary rights of a very large number of the native peasantry, and caused great want, privation, sickness, and *death* in many cases. The horrors which took place in the Malapané district are well known to those who have studied the subject, and they are merely typical of those which occurred in other districts. From a statement which appeared in the *Ceylon Independent* of December, 1889, it appears that in ten years some 29,899 lots, representing some 29,182 acres, were sold by Government for less than one year's rent, of which, approximately, about one-half was bought in by the Government, and the other by private individuals, Moormen, Tamils, low countrymen, &c.

I do not think it is the duty of any stranger, in face of facts like these, to propose taxation to replace such a partial and one-sided tax. But why should not a *light* land tax be levied on the whole of the island, or an income tax on all incomes above 1,000 rupees, and the liquor duties raised, which are exceptionally low? It is said that it would be impossible to levy and collect a land tax. But why should it be possible in India and impossible in Ceylon? Fortunately the whole question has been brought up by the Hon. Mr. Christie before the Ceylon Legislative Council, and the report of a committee, which lately sat on the subject in the island, and also the reports of the Government agents in the various districts, based on the conclusions come to by that committee, are before the Colonial Office. I trust they will come to a decision in favour of the harassed, unfortunate native paddy grower.

Every visitor to Ceylon is expected to go up to Kandy, the capital of the island and seat of Government. It is several thousand feet above sea level, and deliciously cool when Colombo is "red-hot," I had almost said. From Kandy it is easy to push on to "the buried cities of Ceylon," to Dambulla, Anuradhapura, &c. In the first are to be seen the largest and most celebrated Rock Temples of Ceylon—possibly of the world. The Maha Vihare, or Great Temple, is by far the finest and biggest of the five. In it are 53 statues of Buddha in a sitting position, and the first impression is very striking. At one extremity is a recess covered with historical paintings. The landing of Wijeya—an outlawed prince from India—who is said to have arrived in Ceylon with a few followers B.C. 543, conquered the aborigines, and established the Cinghalese in the island—the planting of the bo tree at Anuradhapura, and the dedication of the island to Buddha, are figured on the walls.

The bo tree just referred to is the oldest historical tree in the world. It was planted in 245 B.C., and is now 2,136 years old, and is a branch of the original bo tree under which Gautama sat on the day on which he attained to Buddahood. For over 2,000 years pilgrims have walked along the track which leads to the tree, to offer their devotion to the most venerated symbol of their religion.

But besides visiting these "buried cities"—which showed, by the richness of their carvings and the magnificent architectural proportions of their buildings and the extent which they cover, what a numerous and a prosperous race must have built and inhabited them—I wished to see some of the paddy-fields in the hill district with my own eyes, and accordingly took train to Nuwera-Elija (called Neurellia), and thence thirty-six miles by coach to Badulla. It is wonderful to see how the rice or paddy fields are there constructed in terraces, which are irrigated from some spring or mountain torrent diverted from its course. Sometimes these mud terraces are swept away by floods, and then the laborious work must be recommenced, if, indeed, the Government has not already dispossessed the poor occupier for non-payment of taxes.

Badulla is a village of exquisite beauty, lying like a jewel at the bottom of a deep valley, set in beautiful palms and tropical plants. One enters it by a charming avenue of trees, and the red roofs of the bungalows add to the natural attractions of the place. The Government agent, Mr. Fisher, is a fine fellow. He is in favour of the abolition of the paddy tax, or its reduction, but the latter has the drawback that the expenses of collection would be half the sum collected. His beautiful bungalow was adorned with many trophies of the chase—elephants' skulls and tails, leopards' skins, bears' heads with open jaws—and the talk was of elephants. One fellow was referred to, who was well known in the district, and was called the "United Service elephant," because nearly every civil and military officer in those parts had had a shot at him. When he was killed, he had eighteen old shot-holes in his skull from as many shots; but he fell in splendid condition, though he may have had a headache, no doubt, from time to time. In the church was a memorial stone to Thomas William Rogers, a former Government agent at Badulla, who was struck by lightning at the summit of the Kaputalé Pass, in the neighbourhood. He was a great administrator, and, the tablet adds, killed 1,500 elephants. These animals were not destroyed for the sake of sport, but because they committed the greatest havoc among the rice fields of the poor Goiya, as the peasantry of Ceylon are called.

I can hardly expect that in this rapid survey I have given my readers any adequate notion of the vast country and the many races that inhabit India, but I hope that I have at least succeeded in interesting them in the Indian people by these hurried sketches of Indian scenes and Indian life. Of the gentle manners of the Hindoos as a rule, and of their good temper and good behaviour, even when assembled in the streets in vast crowds, I can scarcely expect to give you any impression.

Never was a nation more blessed with critics anxious to point out their mental, moral, and physical defects. The very subtlety of the intellect of the Bengalese is triumphantly quoted against them, and their moral nature is said to be as stunted and distorted as their physical growth is declared to be puny and weak. Martial heroes, fresh from the cricket fields of Eton, their thews and sinews built up on the roast beef of old England, have nothing but lofty scorn for the emaciated limbs of a submissive peasantry, fed upon rice or millet, and daily exposed to the rays of a burning sun. The shady habits of the natives are dilated upon in every tone of reproach, and the embezzlement of a native bank clerk is descanted upon with virtuous indignation by Anglo-Indians, who conveniently forget the Redpaths, the Collies, and the secretaries of building and benefit societies, who occasionally disappear with funds which do not belong to them, even in this immaculate country.

On board the steamer we came home with a distinguished Calcutta merchant, a former member of the Legislative Council, returning to England for good, after forty years spent in business in India; and on inquiring what his opinion of the honesty of the natives of India was, he said emphatically that he "had almost always had hundreds of thousands of rupees in the hands of native cultivators of Indian produce, indigo, jute, &c., and had never had a written contract with them, and had never suffered loss amounting to a four-anna piece!" Strong testimony from a practical man, well able to judge, and quite as reliable as that of some English barrister at Bombay or Calcutta, who feels the competition of the keen wits of the Bengal Baboos, who has probably never moved out of a very narrow circle, and who has scarcely ever visited a town other than the one in which he practices.

I suppose that the Hindoos are no more free from faults than any other nation; that oppression by the Moslem and climatic influence will tell their tale on character; but in every country there are infinite varieties of character, and no one can justly draw an indictment against a whole nation. If the Indian people need guidance, all the more is it incumbent on their English fellow-subjects to show sympathy with them in their weakness and ignorance. The real friends of India are those who, in the words of the biographer of Lord Lawrence, "know the natives; who sympathise with them and have learnt to love them; who in the spirit of a truly imperial race, look upon themselves as the servants of those whom they rule, and rule by serving them; who do everything that in them lies to bridge over the yawning gulf, which by our fate, or by our fault, still separates colour from colour, race from race, and creed from creed. Till that gulf can be in some measure bridged over, whatever our good intentions, and whatever the benefits of our rule—and they are neither few nor small—we still, disguise it as we may, hold India by the sword; and so long as we hold it by the sword alone, we hold it by the least satisfactory and the most precarious of tenures."

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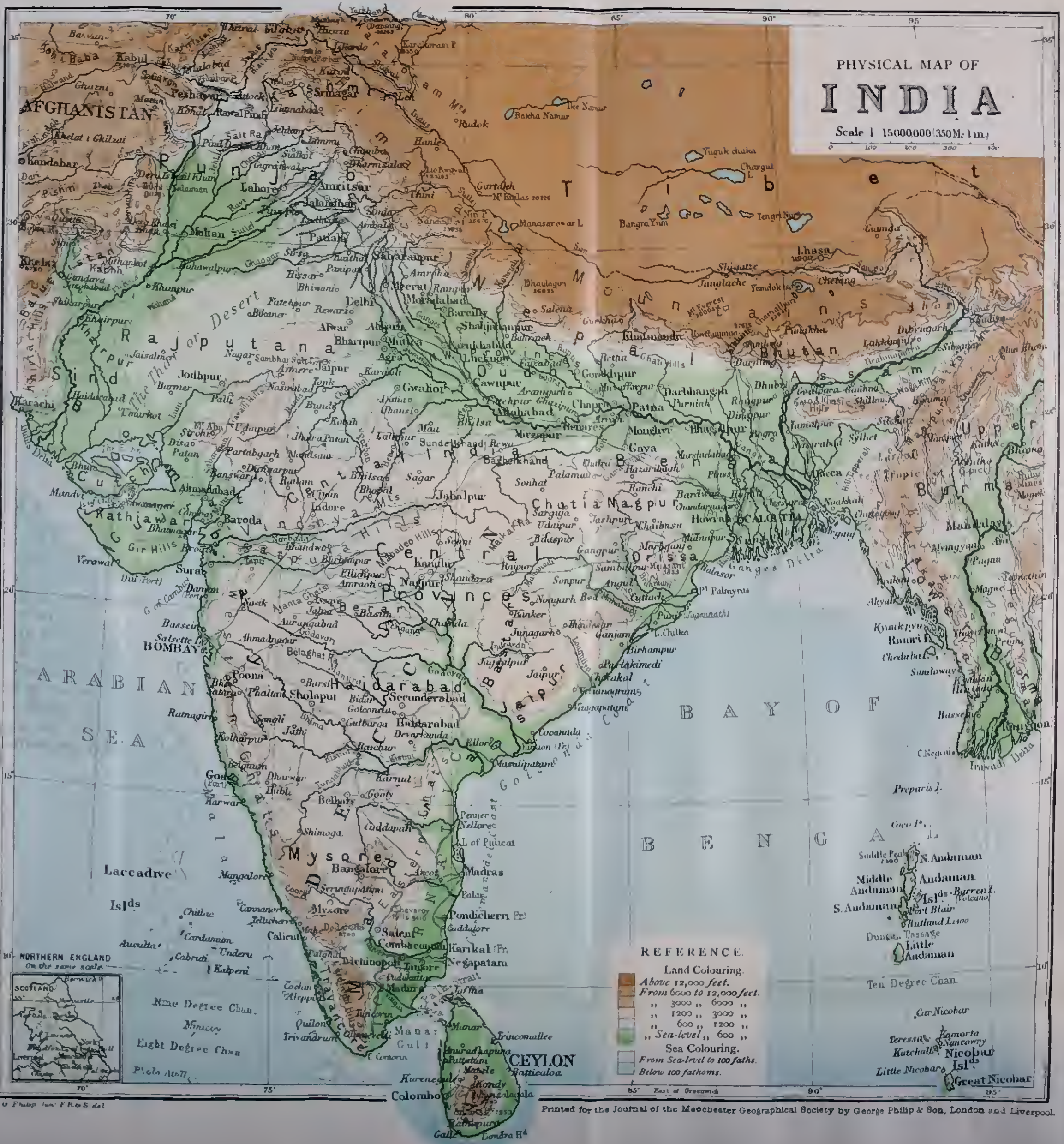

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THE RECENT PROGRESS OF INDIAN AGRICULTURE.

(*See Maps.*)

By Mr. C. L. TUPPER, Chief Secretary to the Punjab Government.

[Addressed to the Society, at the Chamber of Commerce, Tuesday, October 20th, 1891, at 7-30 p.m.]

LAST summer I read an address on this subject in the Economic Section of the British Association, at Cardiff, and I have been asked to discuss the same question on the present occasion. I must necessarily traverse a good deal of the same ground; but I shall follow here a different order of arrangement, and shall endeavour to bring to notice a few fresh points.

The president of the section in which my paper was read at Cardiff was Dr. W. Cunningham. I have since been looking at an excellent book of his, "The Growth of English Industry and Commerce during the Early and Middle Ages." The work carries the industrial history of our own country down to the end of the Tudor period. I mention it here because it opens with an interesting comparison between the economic conditions of our own day and those of England in the times of the Norman Conquest and the early Norman kings. In reading that comparison I was much struck with the resemblance in certain points between England at the time of the Domesday Survey and rural India at the present day. I say *rural* India advisedly, because it is one of the most interesting and remarkable circumstances of the existing situation in India that we have in close, continuous juxtaposition the primitive conditions of a number of very archaic societies, and the latest, or some of the latest, results of the application of steam and electricity, if not in any great degree to the production, certainly on a very large scale to the distribution of commodities. In the large towns, indeed, manufacturing industries are beginning to appear. But I have here to speak of agricultural matters and interests; and in India, in the country, in what we call the *mufassil*, the village groups are ordinarily self-sufficing, just as they were in England in Anglo-Saxon and in Norman days. Markets and fairs have their importance, no doubt, for the exchange of goods; but, economically, the most general idea I could convey to you of an Indian village is that it is a community which itself produces all that is requisite for its own subsistence.

In a rough and general way English commercial history may be divided into four great periods; first, the period of village life; secondly, the period of town life and the trade guilds;

thirdly, the period of the mercantile system described by Adam Smith when the interests of the colonies were subordinated to the interests of the mother country, and the prevailing idea was that you must bring gold and silver into the country by means of the balance of trade; and, fourthly, our own times of great questions between capital and labour, of joint-stock limited liability companies, of co-operative methods of distribution, of Rochdale societies of equitable pioneers. Now rural India stands in a period analogous to the first period when village communities were self-sufficing. This idea is, I know, somewhat crossed and altered by the enormous import of cotton piece goods, which necessarily displace homespun material. But, making allowance for that, we see in an Indian village a survival of a social group which has long died out in Western Europe; a group belonging to times when there were no great manufacturing towns, when coal and iron formed no important items in industry and trade, when raw produce was the staple of such little export as there was, when there was neither capital nor rent in the modern sense of these words, and when labour, in one way or another, was closely bound to the soil. It would take a separate paper, or perhaps several papers, adequately to discuss the meaning and character of rent in India; but the general absence of capital (that is, of a share of wealth which can be employed in one direction or another as the prospects of remuneration are more or less favourable) and the immobility of labour (that is, the reluctance of the cultivators to leave their homes or adopt new walks of life) are very important factors in the progress, past and future, of Indian agriculture. In a typical Indian village the village artisans keep no shops. They are housed just like the other villagers, and the carpenter, the potter, the blacksmith, the shoemaker, and others supply all the pots and pans and implements and leather work required, and are remunerated for their labour by a fixed share of the produce. So varied and so vast a country is India that what is true of one part of it is constantly either untrue or not wholly true of another; but I may safely say that there are enormous tracts, especially in Northern India, where the land is everywhere owned by the members of village communities, in which this very primitive form of barter still goes on. If you travel by rail from Allahabad to Peshawur you will, in the daylight—for the journey will take you two days and two nights—frequently see on either side clusters of small flat-roofed, mud-built houses, so joined together that the backs of the outer houses form, as it were, the wall of a little fortalice. These defensible habitations, dotted all over the flat fertile plains of the Ganges and Jumna and Indus systems, are the homes of the famous Indian village communities; and as you see them gleaming white amid the dusty foliage on the sun-smitten expanse, when you are hurrying along, you will very likely say to yourself, how strange it is that we should be driving our railways straight through the heart of a country whose living institutions are actually more archaic than were those of our forefathers 800 years ago.

The first point, then, to be borne in mind in considering the progress of Indian agriculture is the exceedingly primitive condition of rural India. That a comparatively few thousands out of the many Indian millions have learnt the English language—that a comparatively few Indian gentlemen have the force of character and the means to come to England, and the ability to distinguish themselves in examinations—that there is a vernacular press of considerable volume—that there are numerous native societies modelled on our societies for literary, social, and political purposes—and that a few hundreds of Indians have learnt to copy Western methods of political agitation, are circumstances of much interest both politically and socially. But they are circumstances which should never blind us to the fact that the great mass of the agricultural population, except for the blessings of peace and immensely enlarged facilities of communication, remains at the stage of progress which it had reached when, 150 years ago, began in Southern India the contest between the English and the French, which has ultimately resulted in British Indian dominion. And that stage of progress, I need hardly add, had been attained many centuries before the beginning of that contest.

If the primitive condition of the country is one main point to be kept in view, another is its vast variety. We are concerned with agricultural conditions, and in illustration of their diversity I may quote a despatch of the Government of India written in June, 1880, but in principle, though not perhaps in every detail, as applicable now as it was then. "The population" it was said, "in the several districts or counties (of which there are altogether 229 in India) ranges from 39 to the square mile in Assam to 700 or 800 in Bengal and Behar. The annual rainfall ranges from 5in. or 6in. in the lower Indus valley to 100in. in Assam or Malabar, and to 200in. in Arracan. The soil varies from the arid, sandy wastes of the Western Punjab, or the stony uplands of the Deccan, to the rich deposits of the Ganges delta, where not a pebble can be found for tens of thousands of square miles. Tenures vary from the proprietary communities of North-Western India to the large estates of Bengal and the petty cultivating holdings of Madras and Bombay. There is at least as much variety in the physical and mental characteristics of the people of the several provinces." With due deference to the Government of India, I should say that the variety of the population is even more remarkable than the variety of agricultural conditions, though, indeed, the one kind of variety is not capable of being directly compared with the other. In Europe most men are content to try and learn something of a single country. In India most of us find our experience limited to a few districts or, perhaps, a single province. But in any general remarks about India we must have regard to a great assemblage of many diverse countries and states, removed in space by thousands of miles, and in all that makes social and political progress by at least nine or ten centuries from all the experiences we may have gathered at home.

With these preliminary remarks I come to our agricultural returns—a symbol of the contact between our civilised rule and the mediæval or pre-mediæval societies upon which it is superimposed. It is desirable to explain briefly what the returns are, and how they are compiled, so that we may see what amount of weight should be attached to them. They have been published in their present form only since 1884-85; and they now extend to all British provinces except Bengal, where the permanent settlement has divorced the Government from the soil, and the administrative arrangements for the record of agricultural facts are consequently imperfect or absent. The returns include rice, wheat, oil seeds, sugar-cane, cotton, jute and other fibres, indigo, coffee, tea, tobacco, and chinchona; and lumps together under the designation "other food grains" a multitude of millets and pulses, for most of which we have no English names. In provinces other than Bengal the returns are compiled by villages, by *tahsils* or sub-divisions of districts, by districts, by divisions including from three to seven or eight districts, and for the province at large. The statistics thus collected by the local governments and administrations are brought together in a single set of returns for the whole of British India except Bengal.

The strength of a chain depends upon its weakest link; and it is manifest that if the village statistics are bad, the errors in the district and provincial returns are likely to be enormous. Every effort has therefore been made of late years to improve the village statistics. They are made up by the *Patwaris* or Village Accountants, indigenous officials who have existed in most parts of India under various designations for centuries before our time. Perhaps the greatest agricultural reform undertaken in India during the last twenty years has been the revision and improvement of this agency. There was nothing new in the collection of village statistics; there was nothing new in the careful scrutiny of their results by the local governments or their Boards of Revenue or Financial Commissioners; but it was known that when the time came round, as it does every twenty or thirty years, for the revision of the land-tax or state rental, the statistics collected by the Village Accountants would not suffice, either in accuracy or fulness, for the land-valuation required. Hence, when in any district the land-revenue is revised, when, in Indian phrase, the district “comes under settlement,” it has been the practice to appoint a special staff of native subordinates to help the Village Accountants in producing what was needed or even to do their work for them altogether. In this way the Settlement Officer obtains a complete picture of the agricultural conditions of every village in his charge. Now I think it may be said to have been one of the main points insisted upon by the Indian Famine Commission that every officer in charge of a district should have continuously at command the same sort of detailed agricultural information in regard to every part of his district that is specially acquired by a Settlement Officer when engaged in revising the land revenue. To this end it was necessary to improve the intermediate agencies between the Village Accountants and the District Officers, and to give the District Officers help, both at their elbows and in a central office, towards the full and consistent elaboration of the whole system. This has been done almost throughout British India. In every province there is now some officer under the designation of Director of Land Records and Agriculture, or Commissioner of Settlements and Agriculture, or the like, who is specially charged with the provincial supervision of the collection of agricultural statistics; and in most districts intermediate native officials have been appointed to act under the orders of the District Officers and their principal assistants, and to supervise the *Patwaris* and keep their work up to the mark.

In this reform there have been many great advantages. For the future, as fairly trustworthy crop returns are prepared from harvest to harvest, famine ought to take no one by surprise. Scarcity, not amounting to famine, should be detected on its first approach, and some remedy or alleviation in the way of remissions or suspensions of the land tax speedily applied. The maintenance of a continuous record of agricultural facts should diminish the extent and duration of the special inquiries necessary for re-settlements. As for the returns to which I am about to refer, I think it will be admitted that they are probably much sounder now than they could have been ten years ago, when, indeed, they did not exist in their present form.

In the period of six years covered by the agricultural returns the total cultivated area has risen by 10,000,000 acres, from 126,000,000 acres to 136,000,000. But from this total increase of 10,000,000 acres we must deduct 3,000,000 for Upper Burma and certain comparatively small tracts which were not included in the figures for 1884-5. Comparing this increase with the simultaneous increase in the population, I find that there is about $\frac{77}{100}$ths of an acre for each additional mouth to be fed. The population of the whole of India, including the native states, was announced, when the figures of the census of 1891 were known only approximately, to be 286,000,000. The grand total finally announced is 288,159,672. The net increase since 1881 in British and native territory has been nearly 28,000,000. But, omitting the increase in native states and in tracts or provinces not included in the agricultural returns, I calculate that the increase which we have to compare with the 7,000,000 acres of increased cultivation amounts to 15,000,000. We must take only six-tenths or three-fifths of this sum, because the figures of population are for ten years and the figures for cultivated area for six years. We have therefore 7,000,000 acres for 9,000,000 people, or $\frac{77}{100}$ths of an acre for each additional person, as I said just now.

But the statistics of the extension of the cultivated area taken by themselves give a very inadequate idea of the existing situation. We must also consider the extension of the irrigated area, because whereas the produce of one unirrigated acre will suffice to sustain one person for a year, the produce of one irrigated acre will, according to the computations of the Famine Commissioners, support two and a half people for the same period. The total increase of the irrigated area during the six years under review is about 4,500,000 acres. Of this a part must have been cultivated before it was irrigated, and a part was no doubt virgin soil, which was incapable of cultivation until it was irrigated. From these data we can work out the following sum:—

	Souls.
1. 2,500,000 acres of new irrigation in virgin soil, yields, at two and a half persons per acre, a food supply for..................	6,250,000
2. 2,000,000 acres of new irrigation in soil previously cultivated, at one and a half persons per acre, yields a food supply for	3,000,000
3. 2,500,000 irrigated acres at one person per acre, yields a food supply for	2,500,000
Total..	11,750,000

Hence my conclusion is that we have an additional food supply for 11,750,000 souls to set against an actual increase of 9,000,000 in the population. This is the same conclusion as that which I stated in the paper read before the British Association at Cardiff, except that I have corrected the figures of population to make them accord with the results of the last census, which at the time of the Cardiff meeting were not finally announced.

My broad general conclusion, apart from arithmetical calculations, to which it would be a mistake to attach more weight than usually belongs to Indian statistics, is that the increase of cultivation keeps pace, and does not much more than keep pace with the increase of population. This is not an alarming conclusion, but it is obvious that the process cannot go on for ever. To the mere extension of cultivation there are physical limits everywhere. It is, however, satisfactory to note in India the enormous advantage which is to be gained by artificial irrigation. In localities which are suited for that improvement we can increase the available food supply by leaps and bounds. The practical inference I draw from my examination of the returns is not that in India, as a whole, we are in danger from excessive pressure of the population on the soil,—though that danger has actually arisen in a few congested localities,—but that we ought most deliberately to persevere in our present policy of extending artificial irrigation in those parts of the country where it is shown by experience to be beneficial.

Last autumn, during a visit to Cambridge, I had the pleasure of meeting Professor Henry Sidgwick, who had seen the paper read by me at Cardiff. He pointed out to me that the argument in that paper assumed that the additional food supply was consumed by the additional population, and asked me how I reconciled that assumption with the well-known fact that the Indian exports are largely in excess of the imports year by year. How did I know that the whole of the extra food supply was not exported? I frankly confessed that this important point had not struck me; but I promised to consider it and to take, if possible, some opportunity of mentioning any conclusion I might come to in respect of it.

I think I am now able to offer an explanation which will be quite satisfactory to Professor Henry Sidgwick, and which, at all events, seems sufficient to me. The excess of the exports over the imports is no novelty in India. It naturally did not occur some thirty years ago, when the capital was being raised for the guaranteed railways, and money and railway plant and materials were being poured and piled into the country; and it reached its present proportions, or something like them, in the five years period 1869 to 1874. Some ten years ago, at the time of the report of the Famine Commission, the excess of exports over imports amounted to about £16,000,000 sterling a year. It has increased since, and was by the latest returns £18,750,000. Since the date of the report of the Famine Commission there may have been some local scarcities, as there are at this present time, but there has been no great famine. India, therefore, has been able to support her population and to meet the various charges which the excess of exports over imports represent. For all these charges India receives a proper equivalent. She gains by the peace of the country, by British administration, by the great influx of British capital; and it is to these advantages that the charges are due. Generally they represent the whole cost of the English branch of the administration, part of the cost of the Indian administration, payments for British troops, stores and material, and the interest on British capital invested in India in private trade or public works, or invested in Indian sterling debt incurred for India in England. Now, as these charges have been met all along, it is only necessary to show that the increase of the food supply will enable the additional population to meet any increase of these charges which may have taken place. I find that the excess of the total annual exports over the total annual imports averaged, in the five years ending March 31, 1889, £16,500,000 sterling. As I have said, the latest figures show an excess of £18.750,000 sterling. We have, then, to account for an increase of £2,250,000. Even if we suppose this to be permanent, which it may not be, the food supply has sufficiently increased to keep pace with it, I have shown that we have an extra food supply for 11,750,000 against an actual increase of 9,000,000. There is a surplus, therefore, consisting of food supply for 2,750,000, or of equivalent commodities, if, as is no doubt the case, part of the additional irrigated or cultivated area is sown with products that do not yield food. The value of that food supply or of these other commodities may be roughly estimated at £2,000,000 sterling. This will nearly cover the £2,250,000 increase in the excess of imports over exports for which we have to account; and it ought not to cover it completely, for the agricultural returns, on which the whole argument is founded, omit Bengal, an enormous province, three times the size of England, containing a population 9,000,000 in excess of that of the United States. Bengal is a rich and thriving province as well as a great one; and I have no doubt that if statistics for Bengal were available we should find an ample surplus to cover the £250,000 sterling which remains.

I have no space here to enter upon the large question of railway construction in India considered as a means of famine prevention and agricultural improvement; but I will just briefly allude to it, lest I appear to have overlooked a matter of so conspicuous importance. Objections are often raised to the construction of canals for artificial irrigation on the grounds that they ultimately exhaust the soil, produce swampage, beget fever, and enfeeble the population. I never but once heard any general objection raised to railways in India, and that was the remark of an officer who had spent many years in Northern India, but was perhaps too much versed in languages and ethnology to be equally familiar with political economy. He thought that the enormous stimulus to the export of food grains, which has been due to through railway communication with the seaboard, had added to the difficulties of the rural population by raising the price of food. I am not prepared to say that there has been no suffering amongst landless classes from this cause; but so far as they are paid in grain, it would not affect them, and the equalising of the prices of food grains which has taken place over large areas in consequence of railway construction, though it necessarily involves an increase of price in some places, is on the whole one of the very best and surest of the safeguards against famine. It spreads over millions that economy in consumption which may be a sort of insurance for the lives of nearly all. Politically, commercially, and agriculturally the advantages of railway construction in India are so vast that it may be ranked, with the construction of irrigation works, at the head of all possible agricultural improvements in that country. That the Government is fully alive to these considerations may be seen from the fact that the railway mileage in India has been nearly doubled in the last eleven years. There were in India 8,492 miles of open line in 1879-80, and in 1889-90 no less than 16,097 miles.

As for the objections which have been raised to the construction of canals, I cannot but think them to be largely due to the mistakes of ourselves and our predecessors. The Muhammadan emperors or governors constructed more than one canal in the Delhi territory or the Punjab proper, but these old works were very badly aligned. Some of our own works have been badly aligned too ; and occasionally canals may have been made where, from the nearness of the water-table, or the incapacity of the soil to benefit by irrigation, or the previous existence of irrigation from wells on a sufficiently extensive scale, no such works were really necessary. But, as experience has been gained, such mistakes have been avoided, and it is extremely unlikely that any canal would now be constructed where it would not pay ; and if it pays, we may pretty safely assume that the general conditions are favourable for that form of water supply, though in no case must we overlook the importance of avoiding that swampage of the soil which in the sequel injures its productiveness and the health of the population. The fact is there are in India many forms of artificial irrigation suited to different localities ; and in some places the soil is rapidly exhausted by irrigation unless it is simultaneously manured. I may mention, for instance, two forms of irrigation from hill streams, at the base of the Sulaiman range and in the Punjab Hills respectively. In the one case, the waters of the intermittent torrents, which flow only in the rainy season, are led into embanked fields : and when the higher fields have had their share, a cutting is made in the embankment and the water is passed on to fields at a lower level. In the other case, the clear spring water of perpetual flow is conducted in tiny channels ramifying intricately amongst the little terraced fields which are cut out of the steep mountain sides, and buttressed up with rocks or masonry to keep them in position. In parts of the Deccan and Mysore the storm-water is caught in tanks, often of enormous size, and then distributed in channels to the fields. At suitable points above the deltas of the great rivers of the Madras Presidency dams, called *anicuts*, are thrown across the stream, and the water thus raised to a higher level is taken out of the river by canals. In the Punjab we have two great classes of canals; the inundation canals, rough works which depend for their supply on the rise of the rivers in the flood season; and the perennial canals, constructed with elaborate and costly head works placed high up in the course of great rivers so as to intercept part of their volume and direct it to a level from which it can be utilised by gravitation at all seasons of the year. In soil, in climate, and in configuration and levels, the Punjab is abundantly adapted for canal construction; and there are many million acres of virgin soil available, that require only water and cultivation for the production of excellent crops. In great measure like remarks apply to Sindh; and it may be said generally that the Punjab and Sindh should be an Egypt, of which the Indus and its confluents should be the Nile. Much has been done and is being done to put some such idea into practice. I have elsewhere described at length the great progress which has been made in canal construction in the Punjab; and I will here only say that the canals of permanent flow in that province have now a sanctioned mileage of 1,469 canal miles of 5,000ft., while the distributaries connected with these canals are, in the aggregate, 7,308 like miles in length. Most of these works have been completed. But the Sirsa branch of the Western Jumna canal and the Chenab canal are still under construction.

Nor is it only in the Punjab that there has been recent progress in India in that recent important form of agricultural improvement which consists in the extension of facilities for irrigation. Far down in Southern India there is a very bold and striking project, known as the Periar project, which was ably described by Colonel Hasted at a meeting of the Society of Arts on April 30, 1891. A whole river is to be turned back through a mountain range to water 140,000 acres in the Madura district. The Periar river naturally flows down the west side of the Travancore ghauts. But it is being caught in the watershed by a dam 155ft. high, which pens the water into a lake 8,000 acres in area; and the water is then conducted to the east or Madura side of the ghauts by a tunnel 6,650ft. long.

In the construction of wells, also, there has been progress worthy of note. The extension of canals means that capital raised by Government is being applied to the soil; but the multiplication of wells shows that private effort is being directed to a most useful form of agricultural improvement. Loans can be, and often are, obtained by private persons from the Government for the construction of wells; and the frequency of such construction is a healthy symptom of security of tenure. Here again the diversity of agricultural conditions in India is a prominent fact. In some places, particularly in upland tracts between great rivers, the water table is too far below the surface for wells to be constructed with profit. Sometimes the subsoil is too friable for wells to be made except with a masonry lining at considerable cost. Sometimes a rocky subsoil forbids well construction altogether. The main country for wells is that which lies along the great rivers of the Indus and Ganges systems in Northern India. In the Madras Presidency rather more than a million acres are cultivated by means of wells. But in the much smaller province of Oudh the well acreage exceeds that of the Madras Presidency; and out of a total area of 9,967,700 acres irrigated by wells in India generally (except Bengal), the Punjab and the North-West Provinces taken together account for nearly 7,500,000 acres. The area thus irrigated in other provinces is insignificant. Between the years 1885-6 and 1889-90 the area irrigated by wells increased by about 1,250,000 acres.

Another fairly recent improvement of very great consequence to the agricultural population has been the revision of the land tenures in the whole of Northern India, undertaken largely with the view of extending security of tenure so far as this might be compatible with the undoubted rights of certain classes in the soil. The tenancy question has been deliberately faced in Bengal, the North-West Provinces, Oudh, the Central Provinces, and the Punjab; and in each case a new law has been passed within the last ten years dealing comprehensively with the whole subject. Simultaneously new laws for the assessment and collection of the land revenue have been enacted for the Punjab and the Central Provinces, and in the Punjab the whole land revenue system has been remodelled so that it shall better harmonise with the methods of agricultural inquiry advocated by the Famine Commission.

I may now briefly sum up the really important improvements in the conditions of agriculture in India since the date of the report of the Famine Commission, from which we all recognise that we have made a new departure. First, agricultural inquiry has been systematised in all provinces in the manner already explained. Secondly, the distribution of produce has been immensely facilitated by the extension of railways. Thirdly, the irrigated area has been enlarged by the construction of canals and wells. Fourthly, there has been that rectification of the law of landlord and tenant which I have just described. I will add here a fifth improvement of much value and significance in such a country as India, where agricultural improvement in general largely consists of measures for the prevention of famine, or the mitigation of its ravages, when it unhappily occurs. In accordance with the advice of the Famine Commission, famine codes have been prepared for all parts of the country known to be liable to famine. These are manuals framed with due regard to local circumstances, and assigning in detail their proper functions to all who may be engaged in the relief of famine. Projects for relief works, which will serve some useful purpose and may be undertaken at once when necessity arises, have also been elaborated ; and are kept on record in an accessible form, so, that the business of relief, when it is inevitable, may be undertaken without any delay, and without that confusion which is sure to ensue if there are no plans, or if a number of different plans, hastily devised in an emergency, suddenly come into competition with each other.

Looking to the future, I may remark that there is still abundance of waste land in many parts of the British Indian empire. There is a vast extent of culturable land, as yet untilled, in the Northern Punjab, in parts of the Central Provinces; and in Assam and Burma. But in many places where land is available, the soil is poor, or the country is feverish, or the conditions of life would be so strange to emigrants from the congested tracts of Northern India that any considerable movement of the population to these localities is not to be expected. Where the colonisation of Indian soil by natives of India presents the best prospects of success is in the vast spaces between the great Punjab rivers, which are, as it fortunately happens, so well adapted for the construction of canals. The Punjab, opened out by the railway to the port of Karachi and by the increasingly numerous railways which converge on the strategic points of Lahore and Multan, is becoming, and ought to become, one of the great wheat fields of the empire.

In the congested tracts, which include the Patna and Burdwan Divisions of Bengal, the Benares Division, the Lower and Middle Doábs in the North-West Provinces, parts of Rohilkhund and Oudh, and two or three districts near the foot of the hills in the Punjab, there is little or no room for the expansion of cultivation and what is technically called internecine agriculture has an importance comparable with that which it possesses in the populous countries of Europe. If we take up virgin soils, that is extensive agriculture; if we increase the produce of, or reap more valuable products from soils already cultivated, that is intensive agriculture. It is part of the Indian, as of some other agricultural problems, to turn extensive into intensive progress. Here, except in the very important matter of the spread of artificial irrigation, the past record has little to show. Experimental farms have never proved very successful in India; more often they have entirely failed. A few new products have been introduced—New Orleans cotton, Mauritius sugar-cane, potatoes, tea, coffee, and chinchona. The preparation of tobacco for the English market is also a new and a successful industry. Next to nothing has been done in the introduction of better agricultural implements; not for want of effort, but because the conditions of Indian agriculture differ widely from those of the West. In a vast primitive country where, off the lines of rail, means of communication are commonly bad, and where there is abundance of labour, the application of steam to husbandry is usually out of the question. And where farming is not a business in which capital is invested, but the means of subsistence for millions of small peasant proprietors, tools of all kinds must be very cheap, and so simple in construction that they can easily be mended by village blacksmiths. I know of only one conspicuous success in new agricultural implements. A mill, called the Beheea sugar mill, has a large sale in Upper India.

The problem of manure has much importance in India, but certainly has not yet been solved. There have been great changes in Indian trade; and though indigo and opium hold their own, the gossamers and brocades of the East, the spices, silk, lac, dyestuffs and the like, the old traditional exports from Oriental countries, have lost their relative consequence. Europe now sends to India cotton piece-goods, and takes from India raw cotton, wheat, oil-seeds, hides, and jute. Will this export of raw produce and import of manufactured articles tend to the gradual impoverishment of the soil? This question struck Professor Crookes, who heard the paper I read at Cardiff, and he was kind enough to send me a very interesting little book, by M. Ville, called "The Perplexed Farmer." Professor Crookes has lately translated this book, and, although I have no knowledge of agricultural chemistry, it seems to me, so far as I can venture to form an opinion, to deserve the attention of Indian authorities.

M. Ville's book comprises an analysis of plant life, and enumerates the fourteen ingredients that are always present in plants—ingredients, some drawn from the atmosphere, some from water, some from the soil. By a series of experiments in the growth of plants in the wholly unfertile medium of calcined sand, it may have been demonstrated that different chemicals are dominant in the nutriment of different plants. M. Ville states this conclusion as a certain one, and it may be so, but I have avoided positive expressions because, as a mere inquirer, I am not aware how far his conclusions have been endorsed by other authorities. However, the theory is that the dominant ingredient is that which, if present in sufficient quantity, produces the maximum of growth; and that the best chemical manure for a soil which has not the required dominant in sufficient quantity is that dominant itself.

I think it would be worth while to test M. Ville's conclusions by experiments in India, and if they are accepted, to carry the experiments on to the analysis of soils suitable for wheat, sugar-cane, and other products, and to make local inquiries as to the presence in particular places of the dominants required for different plants at distances from the fields of their cultivation short enough to prevent the cost of transport being prohibitive. If the whole theory is sound and could be made intelligible to Indian cultivators, I think it probable that they would find out how to avoid the difficulty of the cost of carriage and to get useful dominants extracted from some soils in India itself for the purpose of applying them to others. The cost of carriage makes any imported manure at present appear unpromising; and in India farmyard manure, though used in fields near village sites, is very largely needed for fuel.

In conclusion, let me add that we must not forget the relative importance of improvements in agriculture when regarded in connection with other work that the Indian Government has to do. It has to manage and strengthen the complicated finances of a great empire. It has to devise and steadily pursue a twofold foreign policy towards other Asiatic countries on the one hand, and, on the other hand, towards the six or seven hundred internal states of Native India which are under the protection of the British power. It has to provide suitable laws for multiform and multitudinous populations. It has to see to the efficient administration of justice, to attend to police, gaols, and medical relief, and all the requirements of civilised rule. After all, the greatest of all agricultural improvements is peace; and that has been bestowed by the British Government on the Indian continent. Dr. Cunningham's book, which I quoted at the beginning of this paper, describes how William the Conqueror harried the north of England so thoroughly that page after page of Domesday Book shows how one manor after another, which had been fairly well stocked in the time of King Edward the Confessor, was then valueless and waste. There are many parts of India, such as Khandeish in the Bombay Presidency, the Karnál District in the Punjab, and portions of the Southern Deccan, which have been exposed within the last two hundred years to similar ravages. On and beyond the north-west frontier I have myself seen what the state of many parts of India was like in the times before British rule,—towers in the fields as places of refuge, villages built with a view to defence against attack, all the operations of husbandry and pasturage carried on by men with arms at hand. Except on the frontiers of the empire we have no longer to contend with the intermittent or ever incessant raiding of predatory bands. In the greater part of India organised brigandage and unceasing private war have been suppressed. The pacification has been so complete that we sometimes seem to be in danger of forgetting that it was ever effected. But the condition of Upper India in 1857 should be a warning that however stable peace may appear, vigilance must never be relaxed.

Nothing is more true of economic history than that it is closely related with the political conditions of the time. Misgovernment, war, and anarchy mean the absence of security; and insecurity is fatal to improvements in agriculture, as it is fatal to improvements in commerce, and for the same reason it saps the motives to industry. We cannot hope in a few decades to change the hereditary character of peasants which has been formed in centuries of oppression and violence, nor can we convert in any brief space of time to Western scientific belief the empiricism of a thousand generations. But we can, at all events, give to the people security of person and property; we can frame just laws and enforce them; we can promote primary instruction and diffuse useful economic information; and we can add to the efficiency of agriculture by the adoption of a variety of preventives against famine, and conspicuously by the construction of railways and canals. When we have done all this, we must leave very largely in the hands of the people themselves, in the hands of these multifarious Indian races and states, for whose well-being the British nation is responsible, such further progress in Indian agriculture as the future may have to disclose.

NEW ATLASES.

The English Imperial Atlas of the World. By J. G. Bartholomew, F.R.G.S. Containing over 220 maps, charts, plans of cities, &c., revised to the present date, also a Gazetteer of above 50,000 places with new census returns. Crown folio, cloth gilt. Price One Guinea. Published by T. Nelson and Sons, London, Edinburgh, and New York.

This is an admirable handy atlas, suitable for the student and for family use. The maps are printed on stout paper, back and front. Astronomical geography, meteorology, commercial geography, physical and political geography, are all well represented. The colours for the map printing are delicately used. Some of the physical maps are very good, and the north and south polar regions are illustrated with maps of great clearness and value. Many of the maps are illustrated with sections of elevation which are most useful in giving an idea of the orography of the countries. The Index or Gazetteer is very full, the population according to the latest authorities being given. It would have taken too much space perhaps, but one desires to see the latitudes and longitudes given to the places in the index. These are wanting, and in this respect there is a manifest deficiency. However, the Atlas on the whole is one that is of a convenient size, clearly printed, brought up to date as far as possible, and will, we trust, have a wide circulation. It is a very good illustration of the movement in cartographic circles for something better than we have hitherto had, and we are glad to welcome a book so well done and at a price which is small compared to the value offered. We recommend our members to examine the copy in the Library, with which we are sure they will be delighted.

Macmillan's School Atlas: Physical and Political.—A series of eighty maps, with general index. By J. G. Bartholomew, F.R.G.S. Published by Macmillan and Co., London and New York, 1891. Price 7s. 6d.

This is a delightful book, well got up, and will be of great use to those pupils who may have the good fortune to become possessed of a copy. In the index of geographical places, the latitude and longitude is given, and the number of the map where the place named can be found. The physical maps are well done, and the page of map projections is useful. It is a capital book.

RAILWAY COMMUNICATIONS OF INDIA.

By Mr. **W. C. FURNIVALL**, Mem. Inst. Civil Engineers.

(See Maps.)

[Read to the Members, in the Large Room of the Manchester Chamber of Commerce, Tuesday, October 20th, 1891, at 7-30 p.m.]

A SUGGESTION has been made that a note on Indian railways will be acceptable, and may prove interesting to the Society. The subject is a very wide one, and I have not anything like the time to give an exhaustive treatment of the subject. I feel, however, encouraged to attempt to supply an outline, which by its barrenness of detail may perhaps attract attention to points of practical importance, and may thus possibly lead to useful results.

Railways were begun in India about forty years ago, but the first contracts date from 1849.

Whether the East India Company—then the British ruling power in India—ever contemplated the development of railways by private enterprise, in a manner similar to the development of railways in England and America, without a guarantee, does not appear in official records. It seems probable, however, that the directors would have preferred to keep matters in their own hands by a tight agreement with constructing companies—in any case they did so—even had there been a reasonable hope of inducing English capitalists to invest money without a guarantee.

The trading classes of India have always striven to make a high percentage out of small investments, and at the time when railways were first commenced would not have invested any money in such undertakings. As a matter of fact, they have done little or nothing since.

The agricultural population has always been extremely poor, and is not directly interested in raising the value of land by increasing facilities for communication with other districts. Land is usually held by tenants for a term of years only, and proprietary rights are rare except in the case of native princes, rajahs, and hereditary landowners, who bear a small proportion to the whole.

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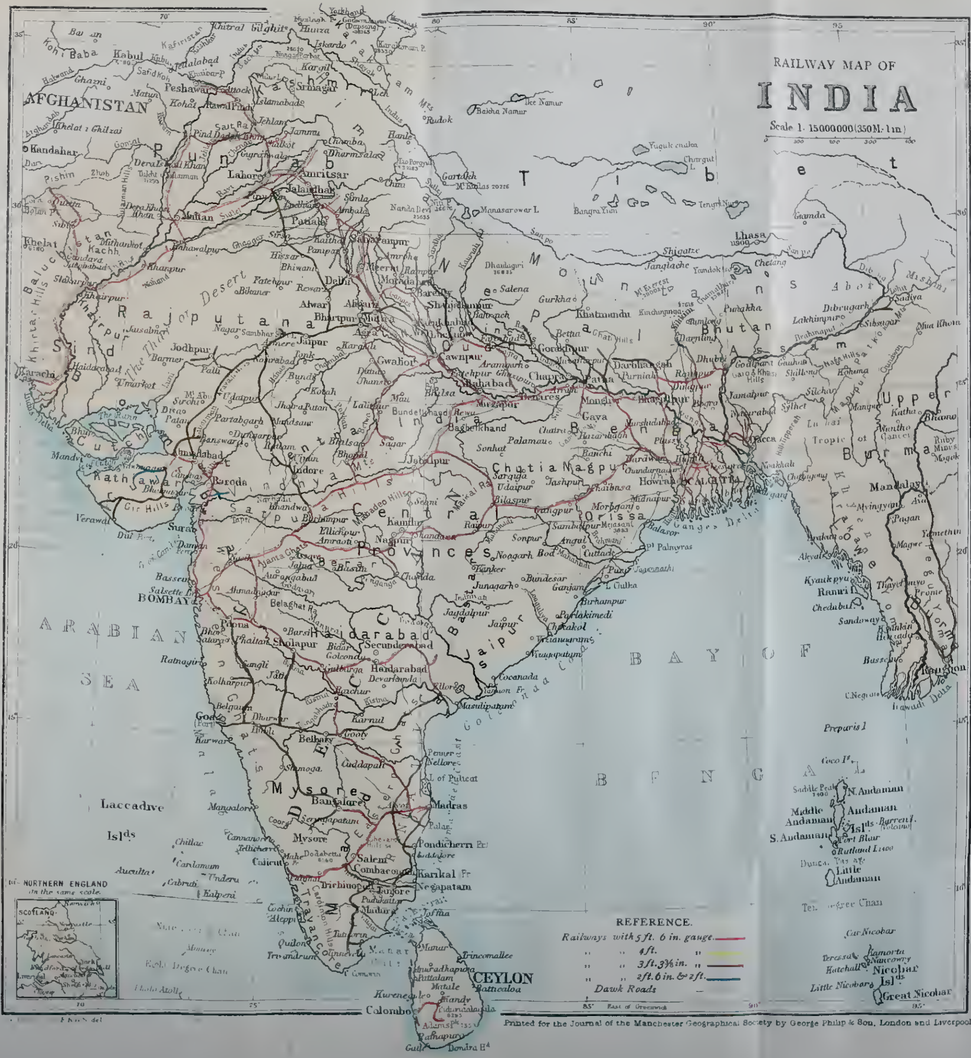

RAILWAY MAP OF

INDIA

Scale 1: 15000000 (350M. 1 in.)

REFERENCE.

Railways with 5 ft. 6 in. gauge ——

" " 4 ft. " ——

" " 3 ft. 3⅜ in. " ——

" " 2 ft. 6 in. & 2 ft. ——

Dawk Roads —

Printed for the Journal of the Manchester Geographical Society by George Philip & Son, London and Liverpool

It was arranged by the Government that a guarantee of 5 per cent should be given. This sufficed to attract money in England, and four companies were formed in 1849:—

1. The East India Railway Company.
2. The Great Indian Peninsula Railway Company.
3. The Madras Railway Company.
4. The Bombay and Baroda Railway Company.

All lines were to be constructed on a standard gauge of 5ft. 6in., and all works were to be carried out in accordance with instructions issued from time to time by the Government.

A few years afterwards a fifth company was added to connect Karachi with the Punjab, by a railway to Kotri on the Indus, from which point a steam flotilla was to be established to Mooltan, and from thence another railway was to be constructed to Lahore and Umritsur. (See map of railways.)

Experience has shown that the routes were wisely chosen. The East India Railway traversed the rich valley of the Ganges for quite 800 miles, and though it was in competition with the boat traffic upon the river, justified its selection at a very early date after completion. Its course, almost parallel to the great river, caused it to meet many very formidable obstacles, necessitating several very large bridges requiring great engineering skill.

The Great Indian Peninsula Railway had to ascend the Ghauts at two points—one in a direct line with Jabulpur, where it was to join the East India Railway, and the other a little further south to effect a junction with the Madras Railway at Rinchur. This was a bold engineering effort, for mountain railways had not been previously attempted in Europe.

The Bombay and Baroda Railway route passed along the coast, and so the line had to cross many big rivers at points where they enter the sea. The most recent accounts from India give information concerning some destructive floods that have just occurred which have damaged this railway over 60 miles of its length. If after so many years security has not been gained, it may be imagined how difficult the first efforts to construct a line must have appeared.

The Scinde and Punjab Railways and the Indus flotilla were designed to afford direct communication between the Punjab and the port of Karachi. The flotilla, however, proved a failure, owing to the difficulty of navigating the shoal water in the rivers, and eventually a connecting link up the valley of the Indus had to be added, necessitating several very large bridges, one of 790ft. span over the Indus at Sukkar. This connecting link railway was built by the Government of India State Railway Department, not by the Guaranteed Railway Company.

The selection of the first routes for the first railways built in India was greatly simplified by the *absence* of good ports on the coast. On the west coast, Bombay and Karachi were the only ports—ships touched in fine weather at many places—but until the construction of the harbour at Mamurgoa Bay, in Portuguese territory, very recently, there were no ports except Bombay and Karachi. The east coast is even worse off, for it may be said that there are no ports, even to the present day, as far north as Calcutta, a distance of about 1,000 miles. A harbour is being built at Madras, but damage has occurred several times by cyclones, and the works are still incomplete. Calcutta is situated about 90 miles up the Hoogly river. The approach is not good, but accidents are rare, now that tug steamers are used for all sailing vessels. All the most important trade of the rich Ganges delta centres on Calcutta.

The great Indian Mutiny of 1857 afforded terrible evidence of the need of railways in British interests for military operations. Shortly after this event the East India Company ceased to exist, and the government was assumed by the Crown.

Drought caused a great famine in 1859-61, which drew forcible attention to the need of improved communication in times of scarcity of food. The Great Indian Peninsula Railway Company was the first to open a section of line to public traffic 20½ miles in length in 1853; the East India Railway followed the next year with 37½ miles; and up to the year 1860 in all 480 miles were open to public traffic. In the next ten years the open mileage rose to 4,775, of which 27 miles was 4ft. gauge.

Traffic on the different lines at first did not realise expectations, and about the year 1870 the obligations of the Government pressed heavily on the Exchequer. It was thought that the 5 per cent guarantee system was an expensive one, and led to extravagant expenditure in construction, and it was determined to effect economies. Among other measures a change of gauge was taken into consideration, and it was determined to build all new railways, and to manage them also, under the direct supervision of the State, by a State Railway Department. This policy was maintained during the next ten years—1870 to 1880. A metre gauge was introduced instead of the 5ft. 6in. gauge, the total mileage open at the close of the decade being:—

	Miles.
Broad gauge	6,835
Narrow gauge	2,473
Total	9,308

The narrow gauge includes two or three short lines of 2ft. and 2½ft. besides the metre gauge.

During this period the East India Railway Company's contract terminated, and the line became State property on payment to the shareholders of certain securities. Arrangements were, however, made for a company to work the line.

Two famines occurred between 1870 and 1880, both disastrous in their effects, and trouble with Afghanistan drew attention to the need of frontier railways for military purposes.

Shortly after 1880 a question arose concerning the advantage which had been gained by the State accepting the direct responsibility of constructing railways, and it was eventually decided to appeal to private enterprise again, which led to several contracts with companies on special terms, some of the lines being broad gauge and some narrow. The history of these efforts would not prove very interesting, and explanations would be very long.

During the next ten years construction of railways progressed as rapidly as the provision of funds was sanctioned by the Imperial Parliament. The contracts of several more of the older guaranteed companies had terminated; their lines, therefore, became State property, under terms similar to those arranged with the East India Railway Company.

Map No. 2 shows the Indian railway system as nearly as can be ascertained at the present time. All the broad-gauge lines are coloured red, and all the narrow gauge blue. It will be observed that the north-west frontier has been protected by broad gauge entirely, and that these lines are connected with the main system of railways by way of Lahore only. This might prove a disadvantage in times of war, and it is certainly desirable to command another route. Another connection is, however, difficult, for the country intervening between the narrow gauge system of Rajputana and the Indus is mostly desert, in which great waves of sand are blown about by the scorching hot winds which prevail at some seasons of the year. This feature of the country is a very serious obstacle to the construction of railways, and efforts to overcome the difficulty have not as yet been made. Water is also very scarce—deep below the surface, and in many places very salt.

All the railways finished in India have been extremely well built. Many of the physical obstacles met with have required engineering works of great magnitude. It would be impossible in a short paper to give details of these structures; it will suffice to say that very many of the bridges can be most favourably compared with railway bridges in any other part of the world. The floods met with in India are at times very heavy, and have needed very exceptional measures to insure safety. A few instances may be given. The flood of 1858 at Attock, near which a bridge over the Indus has been built within the last ten years, rose over 100ft. The highest recorded flood in the Chambul between Agra and Gwalior rose to 97ft. The Ganges rises nearly 70ft. at Benares. Some of the rivers run into flood for several miles on each side of the main channel, which is usually in shifting alluvial soil, needing elaborate training embankments and very costly bridge foundations.

Many years ago it used to be a common saying in India that if the English left the country the evidence of their tenancy would be recorded in the number of broken beer bottles that they left behind them. Such a reproach cannot with justice be applied now. The evidence of an ever-increasing and peacefully-disposed population may be the greatest achievement of the English, and at least some noble engineering works have been built in their days.

The questions arise, however, have the English done enough? So far as railways are concerned, does the completed mileage at the present date indicate a rapid progress, or the reverse? An analysis of some of the records lately received will throw some light on this subject.

As regards capital outlay, I find the following statement in an explanatory memorandum by the Under Secretary of State for India, headed Accounts and Estimates, 1891-92:—

RAILWAYS.

Miles open at end of 1890	16,277	
Capital outlay at end of year	2,128,293,590	rupees.
Average cost per mile open	130,750	„
Number of passengers carried	110,165,080	
Number of tons of goods carried	22,193,293	
Gross receipts	204,498,690	rupees.
Working expenses	102,608,800	„
Net receipts	101,889,989	„
Percentage of net receipts on capital cost	4·79	„

It is added, in somewhat of a rueful strain, however: "While, however, the railways gave in India a return exceeding by $4\frac{3}{4}$ per cent on their capital cost, the expense of paying in England the interest in gold was so heavy that the result of the railway revenue account is to impose a considerable charge on the Government, as shown in the following statement."

The statement referred to need not be given here, because it evidently includes payments for services, besides the railway account. This "considerable charge," as designated by the Under-Secretary of State, is an accident in the fluctuation of the value of Indian money, and bears a direct ratio to the relative value maintained between silver and gold.

The following remarks occur in the Administrative Report on the Railways in India, by Colonel Conway-Gordon, director-general of railways. The report is for the year 1889-90, and is therefore nearly eighteen months old, but it is the most recent procurable. These reports do not reach London until September in each year.

"It is extremely difficult to give a clear idea of the financial transactions of railways in India. In many cases the capital has been raised in sterling in England; in a few others the capital has been subscribed in rupees in India; while in the case of all the State railways the expenditure is met from the general Treasury balances of the empire, payments in England being made in sterling and payments in India in rupee currency. For the conversion of the sterling payments into rupees no general fixed rate of exchange can be or has been adopted. In the case of the older guaranteed companies a rate of exchange of 1s. 10d. was agreed upon in the contracts; in other contracts other varying rates have been fixed; while for the State railways the exchange varies yearly, roughly following the mercantile rate of exchange. The result is that nearly all statements in connection with capital expenditure, whether the figures be given in sterling or in rupees, have to be accepted subject to such modifications for purposes of comparison as may be required, owing to the rate of exchange adopted in the particular case. The figures showing the revenue earnings and working expenses are in the main unaffected by exchange, and, as stated in rupees, may be accepted as accurate."

Short of adopting a bimetallic currency there seems no remedy for this state of things in India; but such a measure affects too many interests to render discussion of its influence on railways possible in this paper.

In the memorandum of the Under-Secretary of State which I have already quoted it is stated that the total capital outlay up to the year 1890 has been 2,128,293,590 rupees. The sum is expressed in tens of rupees—rx., as it is written—because it was at one time usual to convert rupees into pounds sterling by dividing by ten, a fallacy long since exploded.

The last census of India, taken February this year, gives the following figures: Population of British India, 220½ millions; and that of the feudatory States, 65½—total, 286 millions.

The railways which have been constructed serve the whole area. It therefore follows that the expenditure equals 7·44 rupees, or 11s. at present rates of exchange, and the length 3½in. per unit of population.

I have occasionally heard a comparison made between the development of the United States railways and Indian railways, and I have now made some investigations, the result of which show that up to 1888 the length of railways completed in America was 156,082 miles,* and the expenditure 9,369 million dollars. The population may be computed at about 60 millions at that date. The progress therefore was 13¾ feet in length, and £32 4s. per unit of population, which, compared with the figures for India, gives—length, 47 times; expenditure, 58½ times progress in India per unit of population.

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* January 1, 1891, 167,741 miles.

At this point the comparison may be permitted to cease, for it is absolutely impossible to find mathematical formulæ which will express with any approach to truth the difference between the circumstances existing in the two countries. It would need a very vivid imagination to suppose conditions in India which would cause the profitable development of railways at the rate maintained during the recent years in the United States.

The construction of railways in the United States has been effected by the people themselves, for their own individual benefit; they take the profit whether derived from "operating the lines" or from the enhanced value of land, and they bear the loss if their speculations do not realise first anticipations.

An interesting account is given in a book lately published, called "The Railways of America," in which it is stated that at the close of 1876 the total capital invested in American railways amounted to 4,468½ millions of dollars, while at the close of 1888 the investments had increased to 9,369½ millions of dollars, or about 1,010 million pounds sterling had been expended in the interval of 12 years, equal to 84 millions sterling a year. The book concludes with the following remarks: "It is safe to say that no financial interest shows a total of such wonderful magnitude. And with greater emphasis may it be said that the finances of the world record in all ages to the present day no such astounding increase of investment."

In India the people love old customs, and are wedded to old ways. Personal energy is not a distinctive characteristic of the race, and they are extremely poor, so poor that the taxes which would appear very trivial in most other countries would be viewed as a great burden in India.

In connection with railway making, the following little illustration will suffice to show how narrow a margin exists in the income of many of the labouring classes.

Suppose that the railways in India only paid their working expenses and earned no profit, and that the Government had to tax the people in order to obtain funds to pay 4 per cent on the capital invested up to the beginning of this year in railways, the sum required each year from each house would be 1·6 rupee, equal to about 2s. 4d. There are 52 million* houses in India occupied by the 286 millions of people. Small as this tax may appear, it would nevertheless press heavily on many of the people, for there are many households all the members of which have to exist on less than 100 rupees a year. Such a contingency is not in the least likely to arise, however, for the railways pay 4¾ per cent on the stated capital outlay during this year ending 31st December last.

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* Census this year.

The most recent administration report now obtainable is for the year 1889-90, by the Director-General of Railways, from which I have abstracted the following figures. These details are not absolutely accurate, separate figures not being given for broad and narrow gauge of one system of railway in Bengal, which has entailed an estimate of results in that case only, but this affects general results in a very minute degree.

RESULTS FOR THE YEAR 1889-90.

BROAD GAUGE.

Total mileage open to public traffic	9,428	
Total capital outlay	1,574,166,139	rupees
Gross revenue earned	153,699,052	,,
Expenses	75,374,042	,,
Net receipts	78,325,010	,,
Percentage earned	4·98	per cent
Traffic per mile per week	313	rupees
Average cost per mile of railway	166,967	,,

NARROW GAUGE.

Total mileage open to public traffic	6,413	
Total capital outlay	476,294,855	rupees
Gross revenue earned	51,237,577	,,
Expenses	28,399,965	,,
Net receipts	22,837,612	,,
Percentage earned	4·80	
Traffic per mile per week	154	rupees
Average cost per mile of railway	74,470	,,

TOTAL BROAD AND NARROW GAUGE.

Total mileage open to public traffic	15,841	
Total capital outlay	2,050,460,994	rupees
Gross revenue earned	204,936,629	,,
Expenses	103,774,007	,,
Net receipts	101,162,622	,,
Percentage earned	4·93	
Traffic per mile per week	249	rupees
Average cost per mile of railway	129,440	,,

It is worthy of remark that the narrow gauge earned nearly the same percentage on capital outlay as the broad gauge on rather less than half the traffic per mile per week. It is true that the broad gauge has over 900 miles of unproductive military frontier lines, but the narrow gauge has also been carried into sparsely-populated districts where traffic develops slowly.

A break of gauge in any country is a national misfortune. The disadvantage is most acutely felt when the necessity for maximum efficiency is greatest, during a famine perhaps or in war time, when a steady stream of trains constantly running is needed. A check is given at the point where the break occurs, and after a while the wildest confusion occurs in transhipment.

Discussions regarding the relative merits of different gauges very often end in acrimonious disputes, and it is not my intention to endeavour either to justify the Government of India in its decision to change the gauge twenty years ago, or to accuse the administrators of those days of fault. Financially, the returns now show that both gauges have proved successful, and have earned dividends which many chairmen of railway companies in England would be proud to present to their shareholders.

Regarded as carrying machines, it must be recognised that the broad gauge possesses advantages over the metre gauge, for it will carry more in a given time. This advantage is thoroughly appreciated during the times of urgency, such as war and famine.

The East India Railway has now a heavy traffic, and pays well, although the construction has been costly. Two years ago it is represented to have paid a little more than 8·00 per cent on a capital expenditure of 364 millions of rupees. The gross receipts were 538 rupees per mile per week (about £40). The same year in England the average gross receipts of thirty-three of the most important lines was £77 16s. per mile per week. I am unable to give the percentage earned in the latter case. Efforts have from time to time been made to discover the means of comparing the railway goods freights and passenger fares of England and other countries, but absolutely accurate results cannot be obtained, because competition causes different railways in England to establish similar tariffs at certain points irrespective of distances traversed.

Some calculations have been lately made, the results of which are given in a book called "English and American Railways Compared," which are probably very nearly right. The following figures will give an idea of the relative charges in England, America, and India, based upon the best evidence which it seems possible to obtain at the present :—

	Lowest Passenger Fares. Per Mile	Special Goods. Minerals, Grain. Per Ton—Mile.
England (very approximate)	1d.	0s. ¾d. to 0s. 1d.
America (variable)	1d.	1s. 3d. to 2s. 5d.
India (vary different lines)	1s. 7d. to 1s. 4d.	1s. 4d. to 1s. 3d.

In some exceptional cases, no doubt, lower rates have been obtained in America. Circumstances have established low rates in India. After the policy of lowering the rates was adopted the people began to travel, and the grain to move, and better returns were obtained from the railways.

I have prepared a short statement of traffic on eight of the most important lines in India, which shows the average receipts in rupees for the carriage of certain commodities in 1889-90 per mile of railway. Total mileage worked, 9,580 miles:—

Description of Commodity.	East India Railway. Broad gauge, 1,514 miles.	Eastern Bengal Railway. Broad gauge, 231 miles; narrow, 515. Total, 746.	Great Indian Peninsula Railway. Broad gauge, 1,288 miles.	Bombay, Baroda, and Central Indian Railway. Broad gauge, 461 miles.	Rajputana Malwa Railway. Narrow gauge, 1 672 miles.	North-Western Railway. Broad gauge, 2,377 mls.	Madras Railway. Broad gauge, 839 miles.	Burmah Railways. Narrow gauge, 553 miles.
Coal	4,519	157	140	491	29	32	103 }	1
Cotton, raw	610	29	4,728	3,261	873	140	423 }	
Cotton piece goods	1,339	479	810	1,021	391	339	141	40
Grains	2,855	666	4,809	2,431	2,085	2,730	1,321	1,052
Jute	376	4,340	260	97	67	70	67	19
Metal	1,083	208	504	703	182	295	194	35
Oil	269	78	448	155	48	108	92	79
Oil seeds	1,743	199	2,284	2,032	773	344	222	34
Salt	799	285	1,186	896	1,091	238	484	94
Sugar	543	80	570	946	778	479	193	44
Tea	29	557	4	26	15	20	7	6
Wool	49	nil.	16	304	88	226	9	-
Tobacco	216	274	102	198	111	34	77	37
All other merchandise	3,672	926	4,478	4,975	1,302	2,063	2,600	*1,147
Total	18,102	8,278	20,339	17,536	7,833	7,118	5,933	2,592

* Timber 256

The figures contained in this statement are evidences of the trade of the different countries of India. A short description will explain the meaning of the figures.

COAL.

The distribution of coal in India is at present limited to the wants of the different railways and manufactories. The habits of the people do not encourage its domestic use. The imports of foreign coal seem to have ranged from about 800,000 tons, five years ago, to 600,000 tons last year. Most of this goes to Bombay, and part of it goes forward and is distributed northward by the Bombay and Baroda Railway.

In Bengal, the extensive coalfields of Raniganj and Birbhoom cause an important traffic upon the East India Railway.

Abstracting from the table, the following comparison may be made: East India Railway, 4,519 rupees per mile; Bombay and Baroda, 491 rupees per mile; six other lines, aggregate, 462 rupees per mile.

The coal industries of India are absolutely in their infancy at present. Old customs prejudice the people in favour of using certain methods of cooking their food, for which coal would be inconvenient, and so it has not been used, except in Calcutta and a few other towns, to a very limited extent.

If it be assumed that one million people consume 1½lb. of coal per head a day, the demand would be 243,000 tons in a year per million, which is equivalent to about the quantity consumed by the East India Railway in working nearly 1,600 miles of line. As the last census shows that there are 286,000,000 of people in India, the extent of the demand for coal, if the fuel be ever generally used by the inhabitants, may be imagined. In rural parts, wood will possibly remain always the fuel of the people, but in some of the large towns coal has already been used, and it is probable the demand will increase as wood becomes dearer.

RAW COTTON.

The great Indian Peninsula and Bombay and Baroda Railways are the most extensive carriers of cotton, as might be anticipated, because the tablelands of Central India and the Deccan, and the plains to the northwards of Bombay, and also Rajputana, are great cotton-growing districts. Some of this cotton is for the mills of Bombay, but about 200,000 tons are exported annually.

COTTON PIECE GOODS.

It is not possible to ascertain what proportion of this trade is native and what is European. The average trade of all lines in India for 1889 was 575 rupees per mile. The East Indian Railway earnings amounted to 1,339 rupees per mile.

GRAINS.

The total traffic of the eight selected lines amounted to 23¾ millions of rupees during 1889-90, the average being 2,500 rupees per mile of railway. Some of this grain certainly reached England, and the trade is therefore of international importance.

The East India Railway and Eastern Bengal Railway supply Calcutta with contributions of grain of 2,885 rupees and 666 rupees per mile respectively. This is really a small portion of the whole grain trade of Calcutta, because native boats carry enormous supplies of rice from the fertile districts to the eastward. Carriage by boat is more advantageous to the merchants than carriage by railway for some reasons, because the boats are detained for two or three days without demurrage charges, which are very heavy in the case of the railway, but boats are more risky.

Bombay receives the contributions of the Great Indian Peninsula Railway, the Bombay and Baroda and Rajputana systems respectively—4,809 rupees, 2,491 rupees, and 2,085 rupees per mile of railway.

Karachi gets a portion of the North Western 2,730 rupees, but is materially aided by boat traffic from the Indus. Railways have greatly influenced the development of the grain trade in India, as the following few figures will show: The average freight of wheat in India for distances over 450 miles is 3·27 pies per ton per mile—one pie is the 1-192nd part of a rupee. It will thus be seen that a quarter of wheat can be carried 1,200 miles for 6s. 9¾d. per 100 miles per quarter. These rates are sufficiently low to produce a large trade with England, when harvests are plentiful in India.

As an illustration of the value of railways in the development of the resources of India, it may be stated that animal or cart carriage is about twelve times as expensive as railway carriage, and, therefore, supposing a 1,200 mile radius to limit the horizon of any particular commodity from each port in India for European markets, without railways the horizon would be 100 miles only; or, in other words, if grain has to travel 600 miles by railway, and to reach the point of despatch on the railway 50 miles by road, freight charges would be doubled.

JUTE.

Jute is produced in Eastern Bengal, and the Eastern Bengal Railway absorbs nearly all the trade—some of this goes to Europe.

METALS

Indicate almost entirely English manufactures, being carried to places where railway construction is being proceeded with.

The remainder of the articles contained in the list need not be separately noticed.

With the single exception of metals, it is impossible to estimate the influence of railways in India on the imports from England. A low railway tariff must produce some effect, but as the commodities are stored at the ports as they reach the country, it is impossible to trace their onward progress by railway.

Metals are so distinctly English, that there can be no doubt—and when it is remembered that the demands of India now equal about one-tenth of the whole English exports of iron and steel to all countries, and that the demands of the United States and South American republics are diminishing year by year—the value of the development of Indian railways to the iron industries of England will be realised.

Summing up the few remarks which have been made, the following conclusions may be arrived at:—

1. Indian railways have been well laid out, and have been well built—except that the introduction of a break of gauge is a great misfortune.

2. That the passenger fares and goods rates are sufficiently low to promote trade.

3. That a very valuable source of supply of what has been provided for England, by facilities afforded for inland transit in India, at cheap rates.

4. That the distribution of English manufactured goods is facilitated.

5. That a demand for English iron and steel has been created, amounting at present to about 10 per cent of the entire English exports.

The question to which I cannot give a reply is—Has sufficient progress been made in the development of railways in India?

A preliminary report of census taken this year, says: "During the decade that has passed since the last enumeration, the gross increase has been twenty-nine millions, the population of Italy or Prussia at their last census."

If seriously asked to state my opinion on the question of progress made in railways, I think I should reply by another question. Is private enterprise in England dead towards India, that it leaves in the hands of the Government the development of railways by refusing to supply capital without a guarantee?

Accounts show that a reasonable return for investments has been obtained, and that the older lines are earning handsome dividends. Experience indicates that the development of Indian railways opens an important field of demand in the iron and steel industries of England, and furnishes a supply of wheat the price of which competes with America and Russia, so that the cost of bread to the English consumer may be regulated. Experience also shows that railways in India have done much to waken the people to new lights and a sense of new responsibilities which tend to the obliteration of old superstitions, and the generation of loyalty towards the central governing power, and of interest in maintenance of the empire. It is true that the Indian currency has depreciated in its comparative value to sterling money of late years, and that this circumstance has acted as a deterrent to investors in Indian securities, but are not similar risks encountered in other countries?

Had the money which is now so firmly locked up in the Argentine been invested in the extension of Indian railways without any Government guarantee, would not many houses in England now be in more prosperous circumstances than seems to be indicated? The Indian rupee is a silver coin, and has some intrinsic value, and it is backed by its being the currency of a population of 826 millions of the subjects of the Empress, which time seems to render more and more loyal. The Argentine paper dollar depends for its value in relation to gold on the honesty of a nation whose interests appear to be widely separated from the interests of England.

I proposed in the beginning of this paper to trace an outline only, and I shall feel well rewarded if I discover that abler hands than my own undertake to fill in the details.

Africa.—Dr. H. Blink, in "Het Kongoland en zijne bewoners," begins with a historical account of the Congo territory from antiquity till the foundation of the Congo State and the recent Anti-Slavery Congress. He then gives a good description of the coast and of the Congo itself with its principal tributaries. Some remarks are made about the climate and the flora and fauna, and a further chapter is devoted to an ethnographical summary of this part of Africa. The volume concludes with an interesting account of the trade carried on at present on the Congo, and the importance of Banana as the chief trading place near the coast. The map shows the large number of European trading-places which exist near the coast, and the author asserts that Dutch enterprise is active, not merely on the coast but also far in the interior.—*Proceedings of the Royal Geographical Society, July, 1891.*

Mr. F. S. Arnot's Progress in West Central Africa.—Mr. Arnot, writing from Bihé on the 6th August last, informs us that his long detention at that place on his journey from Benguella to Garenganze is coming to an end. His caravan was nearly complete, and he hoped in a few days to cross the Quanza river, on his easterly route. He will be accompanied by Mr. H. B. Thomson and a party of five missionaries and four coloured handicraftsmen from Jamaica. Three of these would probably remain on the way in the interesting country of the Cuvale, in which case Mr. Arnot would stay with them for two months, Mr. Thomson going on to Garenganze, taking with him the present which the Royal Geographical Society had entrusted to Mr. Arnot in 1889, for delivery to Chitambo, the chief of the Ilala country, who behaved so well in connection with the removal of Livingstone's body and personal belongings. The present will be delivered to Chitambo at the earliest possible opportunity, either by Mr. Thomson or Mr. Swan.—*Proceedings of the Royal Geographical Society, November, 1891.*

The Causes of Chinese Emigration.—M. J. de Groot, a sinologue in the service of the Dutch Colonial Government in the East Indies, has made an interesting communication to the Geographical Society of Amsterdam on the subject of Chinese emigration. According to the writer the causes of this emigration are not to be found in the excess of population, but simply in the poverty of the soil of the provinces whence these emigrants come. It is the bare, mountainous valleys of the eastern part of China which furnish the emigrants to the English, Spanish, and Dutch colonies; to California, Australia, and especially to Indo-China and Cochin-China. The prevailing formation of the ground in their native regions is granitic; the soil yields hardly anything, and the rainfall is slight. Potatoes and vegetables of very bad quality are the only food that can be extracted from the earth. In some favoured spots a little rice, but of poor description, can be grown. Another cause of the emigration is disafforestation. Wood is very scarce and consequently very dear. Vegetation being almost entirely plucked up, the formation of a new layer of humus is absolutely impossible. The population of these regions is therefore compelled to seek subsistence in other countries. The writer is of opinion that as soon as China sets herself in earnest to construct a network of railways and to carry out other great works, the stream of emigration, which is causing so much anxiety in many parts of the world, will be stopped, as the people will find in the interior of their own country the work and means of livelihood which they now seek for elsewhere.—*Proceedings of the Royal Geographical Society, September, 1891.*

RECENT TRADE PROGRESS AND COMPETITION IN INDIA.

By Mr. D. A. O'GORMAN.

[Addressed to the Society in the Memorial Hall, Wednesday, Nov. 4, 1891, 7-30 p.m.]

BY favour of your Society, the opportunity has been afforded me of meeting you here to-night for the realisation, as our esteemed Chairman has just suggested, of my endeavour to lay before you a lightly-drawn sketch of native progress, and the competition rising up against ourselves, in a country our trade with which has hitherto been looked upon as the backbone of the Cotton Industry in Lancashire.

The market of which I have to speak to-night is already largely opened to us, and its dealers know and understand us as well as, and perhaps better than, we understand them. There are others, again, which are yet in the chrysalis stage of existence in so far as concerns their personal contact with the manufacturing centres of the West. Their peoples in many cases are ready and fit for much that we manufacture, and are only awaiting the advent of the commercial pioneers of Europe to fly into the arms of such of them as earliest and best study their requirements. The countries themselves, however, are closed against us to such an extent by lack of transport facilities, by land and water on the one hand, and, on the other hand, from the effects of ignorance, more or less pronounced on both sides, that much remains to be done before we can materially reach the great consuming populations of the interior. It should, therefore, be our duty to constantly watch for and quickly seize upon, when offered, the opportunities cropping up from time to time for the further introduction into such countries of that commercial influence which has contributed so materially in its fundamental strength to the maintenance of our political power amongst the nations of the world. By very force of our efforts to bring such countries as internal Siam, Burmah, the whole of the Shan States, and Western China more closely into touch with the manufacturing centres of the West, we should at once gain the goodwill of their peoples, and lay a solid base of operations for ourselves upon the commercial battlefields of the future.

In an article which appeared in one of the London dailies a little while ago, it was suggested that all the signs of the times pointed to our approaching entrance upon a cycle of general

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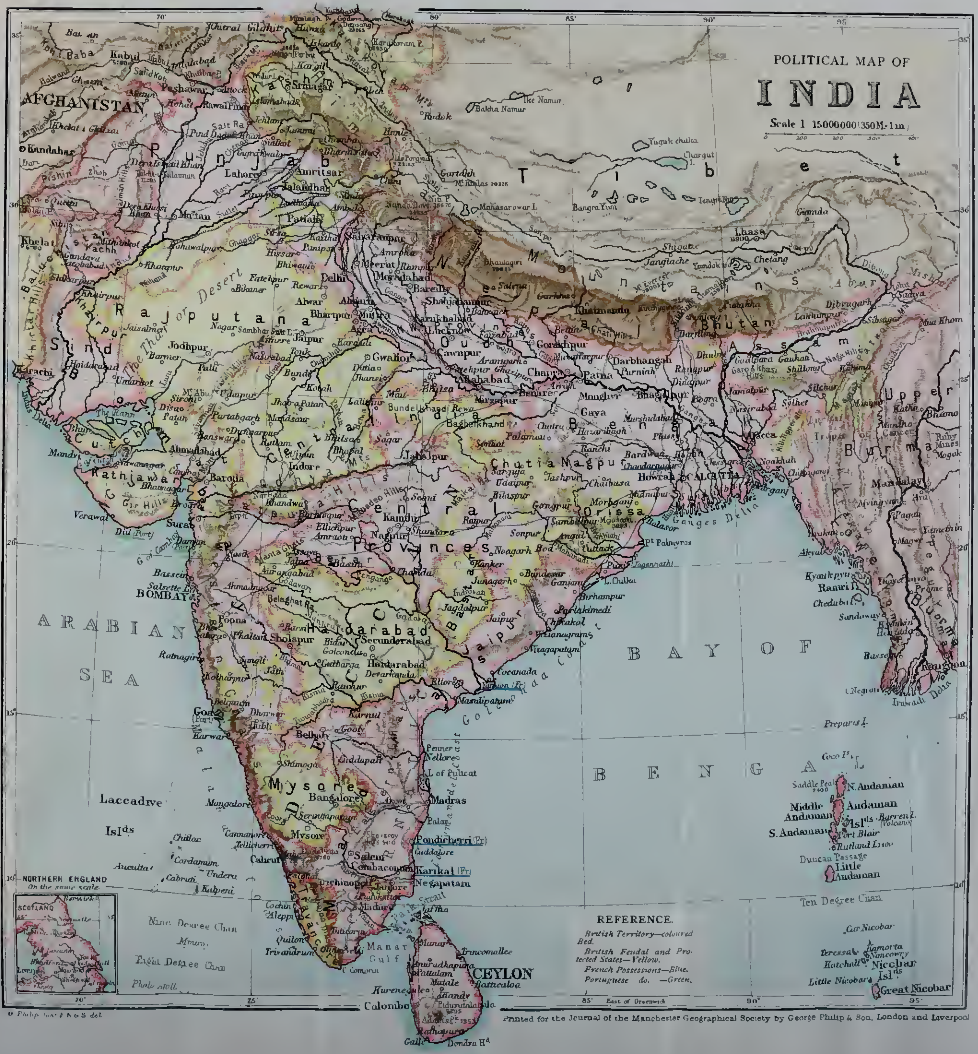

POLITICAL MAP OF INDIA

Scale 1 15000000 (350 M. 1 in)

REFERENCE.

British Territory—coloured Red.
British Feudal and Protected States—Yellow.
French Possessions—Blue.
Portuguese do. —Green.

East of Greenwich

G Philip inst F R G S del

Printed for the Journal of the Manchester Geographical Society by George Philip & Son, London and Liverpool bad trade. Most Manchester people, I believe, will agree with me when I say that, whatever the future may contain for us, we have laboured for a considerable period—as far as concerns the Manchester cotton trade—in the throes of a commercial depression not unparalleled, but sufficiently accentuated to inspire all and sundry with the devout hope that the article referred to may have contained nothing more substantial than the pessimistic imaginings of a falsely-inspired prophet. Some, however, of the prevailing conditions which claim our immediate attention are the native and foreign advances now being made against us in markets in which, until recently, we had been, to all intents and purposes, invincible; and existing circumstances undoubtedly call for some consideration of the contributory causes of such rival progress, as well as for the discovery of the best means for the reassertion of a supremacy that in many departments now appears to be seriously threatened.

Now, without further preamble, I shall proceed to the necessarily somewhat limited review of the country and those of its conditions to which this paper is particularly dedicated, merely mentioning in advance that the existing state of industrial and commercial progress in India is the one which has specially claimed my attention. I would further remark, that in my quotations of figures concerning the value of trade done with and by our great dependency, I shall, in order to secure a readier comprehension of the extent of the sums involved, depart from the accepted method of setting down such particulars, and give them to you in millions, thousands, and hundreds of rupees, in place of the usual tens, lakhs, and crores, which, in their qualifying capacities, are calculated to make important amounts appear small by comparison with their true values.

The country with which I have to deal is India, and as railways have ever been the primest of factors in the spread of Western civilisation in lands beyond the seas, a brief *résumé* of some of the benefits they have so far conferred upon our Indian Empire would not only be in place here but would also afford an excellent idea of the measure in which the country has been opened to ourselves and natives alike, and the opportunities such opening has offered for the development and expansion of resources previously "cribbed, cabined, and confined," but which have been delivered at last from their enforced seclusion by the practicable outlets since furnished by British pluck and science, and private and governmental capital and enterprise.

The total length of railways in India worked by the Government and various companies in 1879-80 was 8,492 miles, and in the following ten years this length had been almost doubled, the figures for 1889-90 being 16,095 miles. During the twelve months immediately following upon the Indian financial year of 1889-90 a further 1,061 miles were added (including 23 in

Burmah and 169 in the Native States), making in all a total length open to traffic on 31st March last of 17,156 miles, or an increase of something over 100 per cent in the past twelve years.

The element of satisfaction this progress affords to ourselves is contained in the fact that nearly the whole of the new lines constructed and thrown open to traffic within the last two years (on the Bengal-Nagpur, Delhi-Umballa-Kalka, Indian Midland, and South Indian) have had for their primary obect the development of trade—import and export—in the districts they have pierced. That this object has met with a fair measure of success in the latter department is further testified, for example, by official returns from the Central Provinces concerning recent extensions of the Bengal-Nagpur Railway. It is shown that the line has benefitted very strikingly by the expansion, consequent upon these extensions, of the export trade of the Central Provinces, the movement of wheat having risen from 26½ lakhs of maunds in the quarter ending June 30, 1890, to 57½ lakhs of maunds in the corresponding quarter of this year; and the increase of raw cotton, linseed, gram, and pulse had been at the same remarkable rate.

In what measure the new lines have assisted in the demand for, and distribution of, native and our own cotton manufactures does not appear, and some particulars in this respect would have been extremely interesting. The reasonable presumption in which we are naturally prone to indulge is, that where development such as that described is actively in process, the increased local prosperity consequent thereupon would demonstrate itself, more or less, by the distribution of some of its gains in the purchase of staple grey goods from up-country dealers, and its reflective effect would naturally fall upon the bazaars and importers in Karachi, Bombay, Calcutta, and Madras.

Still, it must not be forgotten that the more recently constructed lines are as yet too young to show other than the initial signs of that solid traffic for the full development of which the additional facilities they furnish will eventually be responsible, and later on we shall doubtless find ourselves well provided with the information so far lacking. An idea of the present magnitude of the railway system of India may be gained by glancing at the amount of capital so far expended upon the lines already opened, and this is set down as 2,136,700,000 rupees, or, nominally, £213,670,000 sterling. It is, of course, very small as compared with the value of our English system—in fact, little more than the combined capital of our two greatest companies; but a consideration of the conditions obtaining in England, as compared with those which formerly operated and still exist in many parts of India, at once helps us to a truer appreciation of the work so far completed in our great dependency. A great deal yet remains to be done for the further development and defence of the country, as well as for its better protection against famines; and whilst progress at one time was, and to the minds of many still is, terribly slow as compared with that effected in other countries, substantial crumbs of comfort fall to us of the knowledge that railway construction in India is now being pushed on by the Government with greater vigour than by any which it has ever before been characterised. More real progress has been made in the past decade than in the whole of the thirty years between 1850 and 1880. During the past five years the work of construction has gone on at the rate of 600 to 700 miles per annum, and at the present time new roads are being laid down by the State and various companies to the extent of 1,500 miles.[*]

It is to be regretted that, in view of the valuable facilities it affords, the State should have been deprived, in its highly commendable endeavours, of the assistance of much of that private capital and enterprise which in some of its employments—notably in South American departments—has found such calamitous issue. How investors can have ignored so completely, in favour of South-Western bubbles, the solid inducements held out by our great Eastern dependency is somewhat incomprehensible, for the net revenue from Indian railways in an unsatisfactory year (1890) was sufficient to afford an average return of nearly 4¾ per cent per annum.[†] In a few particular instances from 7 to 8 per cent was earned, and not until Indian railways—by some sort of public "stumping" in their favour—are more generally studied, and their intrinsic values more widely appreciated than is the case to-day, may we look for steady investment in such securities by those whose capital has hitherto gone out into other quarters and, unfortunately, "fallen among thieves."

The New East Coast Railway, now in course of construction, and which will eventually connect Calcutta with Madras, Hyderabad, and Bombay (from the Eastern Bengal system, *via* Bezvada, on the Kistna), will complete to all intents and purposes the circuit of India, leaving the Government at liberty to devote a large portion of its further attention in this department to what is technically termed "linking," *i.e.*, the construction of those feeder lines which, in tapping outlying districts, contribute so substantially to the success of a great trunk road.

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[*] On the 14th December, 1891, the Calcutta correspondent of the *Times* telegraphed that the Financial and Public Works Department were then engaged in considering the estimates for railway working in the coming year, and, although the calculations were still subject to alteration, it was likely that about 43,000,000 rupees would be devoted to this purpose. Of this sum the East Coast Railway would absorb about 10,000,000 rupees, and the open and military lines about 7,000,000, the remainder being appropriated by various smaller undertakings. Most recent returns of railway working show that the improvement which has set in since the Budget was issued is even greater than was supposed, and that the revenue from this source is likely to exceed the estimates by about 7,000,000 rupees.

[†] The increase in the gross receipts of the Indian railways for the seven months of the current fiscal year ending on October 24, compared with the corresponding period of the previous fiscal year, is upwards of 10,000,000 rupees on the State and guaranteed lines alone. Including the railways in the Native States, the total increase is 11,200,000 rupees.—*Manchester Guardian*, Nov 30, 1891.

So every mile added to the iron roads of India must be of the highest value to ourselves, bringing more closely and less expensively within reach, as it does, millions of our dependents with whom we were formerly only in the most difficult and distant of contact, and amongst whom the consumption of Lancashire's manufactures must increase by reason of local development, the prosperity usually following upon the breaking-up of new ground, and the general reduction in the price of commodities for which such extensions are responsible. As an illustration of native gain on the one hand and our prejudice in one industrial department upon the other, arising from the spread of railways in India, I have only to instance coal; and the extension of these iron arteries (through provinces into which English coal is still imported, merely because the free entrance of the Bengal or other Indian article is temporarily prevented by the absence of transport facilities) will be responsible eventually for the complete extinction, which apparently cannot now be long delayed, of our hitherto important export thither of the article named.

In 1888 India possessed 117 collieries, 67 of which were in work, and the output in that year was about 1,300,000 tons. In 1890 the Bengal Presidency alone produced between 1½ and 1¾ million tons, and by the full development of the industry she could produce, without difficulty, from 15 to 20 million tons per annum. Last year the material brought to bank had increased to a general total of about 2¼ million tons. The new trunk line across India, from Bombay to Calcutta by way of the Central Provinces, has contributed in one of its parts (the completed Bengal-Nagpur) to the discovery of a coalfield on the Eeb River, along the line at Sambalpur, computed to contain eight millions of tons of good workable coal; and in various parts of India (the Nizam's territory, Central India, Punjab and Baluchistan), principally, however, from the Ranigunj fields of Bengal, the out-turn can be increased so rapidly that with the greater transport facilities to which I have already referred the end of our export of "black diamonds" thither, I may say again, is within measurable distance.

As a general example of the benefit of railways to the country I have only to state that in the 55 years between 1834-35 and 1888-89 the sea-borne trade of India, in the growth of which railway development has played the most important of parts, increased thirteen-fold, or at an average rate of 21·3 per cent per annum during the whole of the last half century.

Now, as Mr. Furnival has recently written for your Society a very elaborate and valuable paper upon the subject of Indian Railways, and their concomitant interests and influences, I do not propose to take up more of your time by their further consideration. We cannot, however, entirely shelve the subject without pausing for a moment's reflection upon the obligation undertaken by the Government for the furtherance of an object which runs hand-in-hand with some of the protective lines. I point to the development of irrigation, having for its principal motive the safe-guarding of certain districts against famine, though perhaps the ultimate completion of the protective railways to which I have just referred must be, in the end, the really effectual agent for the salvation of certain districts from any recurrence of those terrible visitations by which they have been so deplorably afflicted in the past.

The great famines of the century have occurred in 1838, 1866, and in 1876-7-8—the last, as you will perceive, some 13 years ago. In July last, however, the Indian mails brought us the news of an abnormal heat, from the effects of which tramway horses were dropping and dying in the streets; armies of locusts were marching destructively, in serried ranks, across Northern India; plough cattle were dying of hunger and thirst in Rajputana; the green-crop fields were being turned into fields of straw throughout large areas in Southern India, and fresh sowings were impossible in the baked and cracking ground; the nucleus of a pauper population was already formed and thronging the relief works of Madras; and all these were but the preliminary symptoms of a delayed and deficient monsoon, the greater failure of which would have been accountable for horrors unutterable and entirely beyond the scope of our imagination. We were further told that "Meanwhile the British rulers of India stood waiting, but ready, for a possible declaration of war by the elements, a war which would cost millions of money and hundreds of thousands of lives, and was foredoomed from the outset to be more or less a defeat of the piteous efforts of man against the overwhelming forces of nature."

In India, therefore, the omnipotent natural element for good or evil upon the food and other crops, and, correspondingly, upon the welfare or misery of the country, is the periodical monsoon, the nature of which may here be explained, and it is to guard against the possibility of famine following upon its partial failure that the Government devotes a considerable share of its attention to the development of irrigation and the construction of protective railways.

In India then, referring to the monsoon, the year is divided into three seasons: (1) The so-called "cold weather," beginning about the first days of November and extending into the following February; (2) the hot weather obtaining between the latter part of February and the beginning of June; and (3) the "rains" or the monsoon season, from early June to mid-September, between which and the advent of "winter" is experienced, as a rule, a spell of very hot weather, with occasional late rains. This order applies particularly to Western India, and is subject to some slight variation in other parts.

Now, I cannot do better than give you the imperfect outline, which I shall afterwards complete, of the nature of the S.W. monsoon and the causes which may contribute to its partial failure, such as was embodied in a brief despatch from the Calcutta correspondent of the *Times* in July last. He said: "The season so far has been distinguished by the failure of those cyclonic or circular wind movements which usually form near the head of the Bay of Bengal and sweep across India to the Punjab, carrying vapour-bearing currents with them. This abnormal failure is attributed, scientifically, to the heavy winter snows in the regions of Western Thibet and in the highlands beyond Afghanistan, to which the influence of the severe European winter appears to have extended. Last winter was the severest ever known in Kabul, 40ft. of snow falling, which is equivalent to 48in. of rain (more than we get in twelve months). There must, therefore, have been heavy snow on the Pamir plateau, which is now (early July) exerting a pressure to prevent the usual attraction of the current from the Bay of Bengal."

As a matter of fact, the S.W. monsoon first strikes India in the neighbourhood of Cape Comorin at about the beginning of June, progressing somewhat slowly under normal conditions from south to north, and spreading gradually over the Western and North-western Provinces. So the singularly heavy snowfall on the north-western ranges of the Himalayas and neighbouring mountains of Baluchistan, in conjunction with various abnormal differences of temperature in Burmah and Assam, as well as in North-Western and Southern India, accounted in all probability for the delay in the spread of the monsoon, and the latter was responsible for the grave fears entertained in July (but which have since been very materially dispersed) of the famine then seriously threatening Rajputana, Guzerat, the Southern Punjab, and, in particular, various districts in the Madras Presidency.

In the event, therefore, of the diversion of these vapour-bearing winds from their usual track by abnormal conditions existing in other regions, districts such as those named are peculiarly liable to suffer, and it is to their better protection against the distress caused by a deficient rainfall that State efforts in the matter of irrigation are mainly directed.

The financial magnitude of the work is sufficiently described when I mention that the capital involved in 1888-9 was over 319,000,000 rupees, which sum, according to one authority, afforded a return to the Government, apart from the general protection for which it provided against famine and the widely-spread benefits of its expenditure to the ryots, of 3·8 per cent, the area under irrigation being set down as 12,098,000 acres.

This result, however, is not supported by the figures of the estimate for 1891-2, which leave a total charge upon revenue from the capital involved of over seven million rupees. Of course it would be an additional source of satisfaction if, over and beyond their attainment of the main object, these irrigation works could be made to yield some slight pecuniary interest upon the enormous outlay they have entailed. For various reasons, however, such a return is not to be counted upon, and in its absence the Government is, perforce, obliged to remain content with the moral satisfaction the work affords, and the knowledge that the expenditure of millions entailed by famine is, to a specified extent, provided against.

As I have said, irrigation is, perhaps, of secondary importance as compared with railway extensions, and the latter must eventually be the supreme factors in absolute famine prevention, by the facilities they afford for the carriage of food-stuffs to distressed districts, and the establishment of greater stamina and resistive powers in the masses by their full development of the country's resources. In the past, irrigation occupied the attention of the Government to the very considerable exclusion of the claims of railways to be constructed particularly for the relief and prevention of famine. With their past experience it is unlikely that the error will be repeated, and the time may not be far distant when the seclusion by which districts previously afflicted were closely hemmed in will be entirely, as it is now very materially, broken through. Then the cry of "famine" in the land will merely serve as a local "bogie-man" with which to quiet unruly olive branches.

Now, it may occur to many of you that certain of my observations have been somewhat beyond the immediate purpose of this paper, *i.e.*, the review of trade progress and competition in India. It is impossible, however, to ignore, in connection with this subject, the infinite importance to manufacturing England of the expansion of railway construction and irrigation in that country, and a due appreciation of the possibilities thereby afforded to the natives, and the influences at work for the benefit or otherwise of Lancashire manufacturers and merchants, would be impossible in the absence of some general reflection upon the points to which I have so far drawn attention.

As Lancashire's vitality is mainly dependent upon the success of her cotton manufactures abroad, it would be profitable to consider for a moment the influence of the Indian industry in this line with reference to the extent to which it caters for home consumption and the steady progress of its manufactures in foreign markets. The figures I may mention in connection therewith are quoted for the purpose of marking the more appreciably the measure in which our county may be said to have been supplanted, in certain departments, by India's supply of a demand for the full response to which our own manufacturers and merchants alone were formerly responsible.

In 1888-9 the cotton mills at work in India numbered 108; they contained 2,669,922 spindles and 22,156 looms, and the total capital invested in the industry was set down roughly at one hundred million rupees. During the year ending 30th June, 1890, there was an increase for all India of thirteen mills, with 511,678 spindles and 1,851 looms; and the latest returns for this rapidly-growing industry show that during the twelve months immediately preceding the 30th June last a further thirteen mills had been erected in the country, thus bringing up the grand total for all India to 134 mills (there were 137, but two were burned down and failure marked the attempt to reconstruct a third). These 134 mills contained 3,351,694 spindles and 24,531 looms; they employed a daily average of over 111,000 hands; in the twelve months they consumed about 462 million weight[*] of the raw material; produced manufactured cottons to the value of 98,950,000 rupees[†]; exported to external markets about 169¼ million weight of yarn and 68 million yards of cloth (valued at 68,100,000 rupees), exclusive of the trade coastwise and by rail to Indian ports and internal marts; and to-day eleven millions sterling is not, perhaps, an exaggerated estimate of the total capital involved in the manufacture of cotton in India.

The large share possessed by the Bombay Presidency in this industry is now represented by a total of 91 mills (67 in the Island itself and 24 elsewhere throughout the Presidency), with 2,360,170 spindles, 18,487 looms, 78,121 operatives, and a consumption of about 346 million weight of cotton. The shipments of Bombay mill produce only to foreign markets, coastwise to her own ports and by rail to her internal marts, amounted for the year ending 30th June last to over 188 million weight of yarn and 185 million yards of cloth.

Calcutta, with nine mills, consumes about 41 million weight of the raw material, leaving about 75 million weight for use in all the other mills in India, eleven of which are in the neighbourhood of Madras, while the remaining twenty-three are distributed amongst the Central and North-West Provinces, Mysore, Hyderabad, and Berar.

Now, when we remember that twenty years ago the number of cotton mills established in all India was about twenty, and the spindles they contained fell short of half a million, our speculation becomes the more pronounced as to what may be the state of affairs twenty years hence, with her continued purchase of the most improved machinery, the greater skill of the labour employed, cheaper fuel, her further importation of Egyptian and American cotton, and her consequent spinning and weaving of finer counts and qualities. It seems only reasonable to suppose that every extra mill erected in the provinces will meet the more extensively local demand hitherto supplied from Bombay, and the curtailment of the latter's up-country trade will drive her of necessity into the closer cultivation of external markets. The home consumption of her manufactures, particularly in cloths, has already attained important dimensions; and with regard to her export trade, the remarkable strides made abroad are indicated by the fact that her shipments of cotton twist, yarn, and piece goods—principally the two former—have advanced in value from about three-quarters of a million sterling in 1876 to about seven millions sterling in 1890-91, an increase, roughly, of 900 per cent in fourteen years.

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[*] Cotton consumption in native mills, twelve months ending June 30: 1889, 888,906 bales; 1890, 1,007,906 bales; 1891, 1,178,906 bales, each of 392 lb.

[†] The total production for the year ending June 30, 1884, was valued at 53,100,000 rupees.

With regard to India's cotton manufactures generally, composed so far of the coarser sorts, they found their way originally to China and Japan. Having, in the special classes to which I have referred, particularly in yarns, beaten us out of those markets, the attention of Bombay shippers was next turned to Ceylon, the Straits, the East Coast of Africa, and the Arabian coast, &c. In all of these markets, with the exception of Japan, the demand for Indian cotton manufactures is steadily progressing.

With particular reference to yarns, we did a larger trade with China and Japan ten years ago than we have done since, viz., in 1880, 46½ million weight; and in 1890 only 38 million weight. (See footnote, page 241.) On the other hand, shipments of Indian spinnings to China increased from 6½ million weight in 1876-7 to over 150 million weight in 1890-91, the exports of the latter year being 37 million weight above the quantity forwarded in 1889-90. Notwithstanding the discouraging reports which have reached Bombay from China from week to week during the past few months, we find that shipments thither of cotton yarn spun in Indian mills have steadily and substantially increased, as will be gathered from the following extracts from the most recent official returns available:—

EXPORTS OF INDIAN COTTON YARN TO CHINA.

Months.		1889. Lbs.	1890. Lbs.	1891. Lbs.	Increase. Lbs.
4	April 1 to July 31...	40,192,525	49,618,735	55,256,218	15,063,693
5	April 1 to Aug. 31...	49,047,665	63,806,345	62,359,463	13,311,938
6	April 1 to Sept 30...	56,526,495	72,990,143	80,384,463	23,857,968
7	April 1 to Oct. 31...	68,339,635	86,266,845	92,904,663	24,565,028

There was a distinct falling off (the only one, be it said) of 1,874,057lb. in Indian shipments to China during the month ending October 31 last, as compared with the same month of

1890; but the total exports for the seven months ending October 31 were, as is shown, most substantially in excess of those for the corresponding periods of the two preceding years.

The Indian yarn trade with Japan, however, has been for some time past in a moribund condition, and shipments to that country—which increased from about 57,000lb. in 1877 to nearly 23 million weight in 1889-90—fell away in 1890-91 to between 11 and 12 million weight. When the accounts for the official year ending March 31, 1892, come to be finally adjusted, it is unlikely that more than half of the quantity last named will be found to have passed through her ports. This is presaged by figures published since the close of the year ending March 31, and which are as follow:—

EXPORTS OF INDIAN COTTON YARN TO JAPAN.

Months.		1889. Lbs.	1890. Lbs.	1891. Lbs.	Decrease. Lbs.
4	April 1 to July 31...	6,977,960	4,446,882	2,006,400	4,971,560
5	April 1 to Aug. 31...	8,134,560	6,452,422	2,241,600	5,892,960
6	April 1 to Sept. 30...	10,608,560	8,108,022	2,676,400	7,932,160
7	April 1 to Oct. 31...	14,023,360	9,625,222	3,040,800	10,972,560

This decline in Japanese imports—a decline progressing rapidly towards a complete extinction which in no way benefits ourselves (see footnote, page 241)—is due to the competition of her own mills, of which, on the 30th June last, there were thirty completed and six in course of erection, containing together 377,970 spindles. The cotton consumed monthly in these mills had increased from 1,152,250lb. in July, 1888, to 6,156,000lb. in June last; and the monthly production of yarn had risen from a little over a million pounds per month in 1888 to 5¼ million in June of this year. The classes produced are particularly suited to the requirements of those for whom India previously catered, and prices of the local articles are very much more in favour of Japanese buyers than are those required for Indian spinnings. In yarns of the kinds to which I have referred Japan appears to be not only rapidly approaching self-containment, but is also entering into competition with Bombay for a share of the largely-increasing trade of China, the growing demand of which country has been recently overtaken by Indian production. With the forthcoming abolition of the export duty hitherto interfering materially with the realisation of Japan's competitive efforts, everything points to a success commensurate with her powers of supply. Cotton spinning by power in China is still so entirely in its infancy as to call for no special remark beyond the suggestion that India must be prepared for the rapid development of opposing forces once the "Middle Kingdom" becomes less antagonistic to the "innovations of Western barbarism."

Our non-participation in the growing demand of China is largely due, no doubt, to the vagaries of silver, and in the department under review Lancashire's prospects are flushed with a hue anything but *couleur de rose*,* for, despite rapidly-declining shipments to Japan, the material increase in India's total exports of cotton yarns to all markets is most distinctly marked. During the twelve months ended March 31st last they had increased by 19½ per cent over those of the previous year, and in the past decade by 450 per cent.

1881-2. Lbs.		1890-91. Lbs.
30,750,000	....	169,250,000

Her exports of cotton yarn to "all markets" (the figures concerning which include a rapidly-developing trade with "other countries," the most important among them being the Straits Settlements, Aden, Arabia, Persia, and Turkey in Asia) since the close of the official years ended 31st March, have been as follow:—

Months.		1889. Lbs.	1890. Lbs.	1891. Lbs.	Increase. 1891—1889. Lbs.
4	April 1 to July 31...	48,910,054	55,650,970	60,308,478	11,398,474
5	April 1 to Aug. 31...	58,083,131	70,292,629	71,073,820	12,990,689
6	April 1 to Sept. 30...	69,610,094	83,516,298	87,865,851	18,255,757
7	April 1 to Oct. 31...	83,189,541	98,858,336	101,333,830	18,144,289

Turning from twists and yarns to the exports of piece goods from Bombay to China and Japan (plain cottons), after supplying home requirements, a very few figures will suffice to place us *au courant* with the fortunes of the trade from its inception, and, commencing first with that done to China, we see that in 1881 she took 168,139 yards; in 1882, about 2¼ million (2,188,770); in 1888, about 15¾ million (15,751,688); and, in 1890, only 3,660,574 yards. To Japan the shipments in 1881

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* Our own exports of twist per twelvemonth to Eastern markets of recent years have been as follow in pounds weight:—

	1888. Lbs.	1889. Lbs.	1890. Lbs.	1891. Lbs.	Decrease. 1891—1888. Lbs.
India—Bombay, Madras, Calcutta, and Karachi..	48,700,000	45,300,000	39,600,000	45,100,000	3,600,000
Hongkong and Shanghai..	17,400,000	8,900,000	14,600,000	12,800,000	4,600,000
Japan	27,200,000	26,000,000	22,300,000	14,400,000	12,800,000
Manila	1,700,000	1,800,000	1,600,000	900,000	800,000
					Increase. 1891—1888.
Rangooon	3,900,000	5,100,000	4,800,000	6,200,000	2,300,000
Batavia	800,000	600,000	800,000	2,000,000	1,200,000
Ceylon—No change.					

	Lbs.
Gross decrease	21,800,000
Gross increase	3,500,000
Net shrinkage	18,300,000

were 5,250 yards, rising in 1882 to 565,953 yards; falling away in 1888 to 140,321 yards, and declining still further in 1890 to 23,800 yards. So in her exports of native-made piece goods to China and Japan, Bombay was not completely happy in 1889-90. An improvement followed, however, and for the year ending March 31st, 1891, the shipments of Indian piece goods to all markets had increased by 13½ per cent over those of the previous year. Notwithstanding, therefore, the temporary depression described, our dependency has been able to again reach her best records by the very material assistance she has received from the rapidly-growing demand for her makes in those other external markets to which I have already had occasion to refer.

The increase in India's exports of cotton piece goods during the past ten years has been 126 per cent, or more than 12½ per cent annually, the quantity sent out of the country being about 30 million yards in 1881-82, and nearly 68 million yards in the last fiscal year.

It is instructive to notice, after marking Indian progress in the cotton industry, that of recent years her imports of twist and yarns from ourselves have not been distinguished by any advance. (See footnote, page 241.) A stationary position, in fact, has barely been maintained, despite the considerable growth of population during that period. Her imports of cotton piece goods show up in a light still less promising to ourselves. Between the fiscal years (ending March 31) of 1886-7 and 1890-91, India's imports of grey, bleached, coloured, printed, and dyed cotton piece goods had decreased by 141,395,000 yards. Later statistics show the following decreases during certain periods of this year, as stated below, compared with her imports during the corresponding periods of 1890:—

Months.		Decrease 1891-90. Yards.
4	April 1 to July 31	85,813,809
5	April 1 to August 31	136,802,756
6	April 1 to September 30	137,048,388
7	April 1 to October 31	156,545,475

It may be generally interesting to show how the above periods of this year compare with similar periods of 1889, and the departments in which the falling-off has been most marked. These results may be secured by the introduction of the following tables:—

IMPORTS OF GREY, BLEACHED, AND COLOURED COTTON PIECE GOODS INTO INDIA.

Months.		1889. Yards.	1890, Yards.	1891. Yards.
4	April 1 to July 31	689,373,573	654,244,904	568,431,095
5	April 1 to August 31	856,700,278	859,585,779	722,783,014
6	April 1 to September 30	1,011,519,639	1,026,856,732	889,808,344
7	April 1 to October 31	1,173,913,478	1,210,734,162	1,054,188,687

Decrease during the four, five, six, and seven months of the official year of 1891-2, as compared with the corresponding periods of 1889 :—

Months.		Grey. Yards.	Bleached. Yards.	Coloured. Yards.	Total. Yards.
4	April 1 to July 31...	72,554,867	5,117,398	43,270,213	120,942,478
5	April 1 to Aug. 31...	80,892,490	1,171,035	51,853,739	133,917,264
6	April 1 to Sept. 30...	75,218,580	*	52,906,457	128,125.037
7	April 1 to Oct. 31 ...	72,999,508	†	54,525,441	127,524,949

The decrease in India's imports of cotton piece goods for the above periods of 1891, as compared with those of the corresponding periods of 1890, are much greater than the differences in similar periods of 1891-1889 (as may be seen by a foregoing table). Shipments hence in 1890, from a variety of causes, were extraordinarily heavy, and have been largely responsible for the stagnation which has since ensued.

The very material shrinkages in India's imports, as shown by these tables, cannot be attributed to any restricted consumption by the masses, for they are more flourishing and are buying more than ever before. In the past decade the population of India has increased by 10¾ per cent. That every unit added to the population requires his or her modicum of clothing is attested in a measure by the fact that the trade of the country has grown in the same period by 42 per cent, an expansion four times greater than that of the population. Upon the latter the value of the trade of the last fiscal year falls at the rate of nearly seven rupees per head. This sum represents an intrinsic advance of 1¾ rupee upon the incidence per head of ten years ago. To account for the decrease in our cotton piece goods trade with India we are provided with numerous reasons, such as the rise and fall in the gold value of silver and concurrent fluctuations in Eastern exchanges, the heavy contracts entered into last year, the steady decline in the values of piece goods by which the present year has been marked, the serious losses on the part of native importers, subsequent failures amongst them and the consequent distrust and restriction of credit, and the higher prices of foodstuffs following upon a crop failure—more or less accentuated—in districts affected by a deficient monsoon.

Beyond these, however, are two causes which appear to be as largely responsible as any others for the existing state of affairs, viz., the mushroom-like growth of native mills and the falling-off in India's re-exports. With regard to the former, it is beyond question that India's imports of such classes of cloth as are woven in her own mills have declined enormously, as a consequence of which Lancashire's trade has been materially

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* Increase for six months ending 30th September, 1891, of 6,413,742 yards, though short by 6,397,585 yards of the quantity shipped in the corresponding period of 1890.

† Increase over 1889 of 7,800,158 yards, though 13,612,189 yards short of the quantity imported in the seven months ended October 31, 1890.

limited to finer qualities (in which there is no present Indian competition) and reduced to considerably smaller proportions. Thanks to the development of the cotton industry in Bombay and elsewhere in India, the time appears to be within measurable distance when our exports of coarse and medium cottons, which have hitherto formed the bulk of our trade with that country, will have entirely disappeared, and Lancashire will then be confined to the manufacture of such classes as may still remain beyond the sphere of native production. It is, of course, not suggested that native mill competition has replaced Lancashire manufactures to the full extent of the shrinkages shown. A certain proportion of the falling off in India's imports of cotton piece goods must undoubtedly be attributed to the last cause I have named. The very material decrease in this department is due in the most important of measures to our establishment of more direct means of communication between our own ports and those of the Persian Gulf, the East Coast of Africa, and other Asiatic countries lying east of Suez and west of Bombay. The changes thus effected have resulted in the diversion from our dependency of much of the re-export trade with which she previously counted, and the figures concerning the same, particularly with relation to cotton piece goods, were such available, would reduce to less significant proportions the falling off to which I have drawn your attention.*

Before departing finally from Bombay I should like to refer for a moment to the trade done thence to the East Coast of

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* I am now (January, 1892) enabled to add a few particulars concerning the decline in our Eastern trade. In a table of exports recently published are to be found the following differences in our shipments to Eastern markets :—

EXPORTS OF PLAIN AND COLOURED COTTONS PER TWELVEMONTH TO BOMBAY, CALCUTTA, MADRAS, KARACHI, HONGKONG, SHANGHAI, SINGAPORE, MANILA, AND JAPAN.

	Yards.
1888	2,844,600,000
1891	2,486,800,000
Decrease	357,800,000

	1888.	1891.	Decrease.
Bombay, Calcutta, Madras, and Karachi	1,987,500,000	1,751,100,000	236,400,000
Hongkong and Shanghai	565,300,000	522,900,000	42,400,000
Singapore	150,500,000	119,700,000	30,800,000
Manila	64,400,000	33,500,000	30,900,000
Japan	76,900,000	59,600,000	17,300,000
		Total yards	357,800,000
			Increase.
Ceylon	13,900,000	17,400,000	3,500,000
Rangoon	40,400,000	57,400,000	17,000,000
Batavia	103,300,000	150,300,000	47,000,000
		Total yards	67,500,000

Africa, not only as affecting native manufactures, but also as influencing a large portion of the productions of our own mills, the ultimate destination of which is the East Coast, but which are first sent to Bombay and shipped therefrom to Zanzibar, or in some cases are stopped for transhipment at Aden. The bulk of this trade has hitherto fallen into the hands of Bombay native merchants and their compatriot representatives on the African coast. This is not as it should be, and is only an earnest of the important part they must eventually assume in the commerce of newly-awakening Eastern nations, if we be content in the future to watch their advance with the same supineness as that by which we have (until quite recently) been affected during the past twenty years.

That the African trade in Indian piece goods is advancing rapidly, is evidenced by the fact that, whilst shipments to the East Coast only amounted in 1889-90 to about 21½ million yards, they had increased for the year ending 31st March, 1891, to 25½ millions (nearly 20 per cent). It will be readily admitted that this expansion is not merely ephemeral, when I state that, while for the three months ending June 30, 1889, not more than 4¾ million yards were shipped from Bombay to the East Coast *via* Zanzibar, and 6½ millions for the corresponding period of 1890, those for the same three months of this year reached a total of nearly 12¾ millions (12,636,351), or as much in three months of the current fiscal year as was shipped in six months of the year ending March 31, 1891. During the whole of the

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	Yards.
Gross decrease 1891-88 to Bombay, Calcutta, Madras, Karachi, Hongkong, Shanghai, Singapore, Manila, and Japan	357,800,000
Gross increase to Ceylon, Rangoon, and Batavia	67,500,000
Net shrinkage............	290,300,000

To Ceylon the increase is mostly in plain cottons; to Rangoon the increase is in the proportions of three-fifths of plain cottons and two-fifths of coloured; to Batavia the increase is in the proportions of one-fourth of plain cottons and three-fourths of coloured. On the 8th inst. (January, 1892), Messrs. W. H. Nott & Co., of Liverpool, wrote to the *Manchester Guardian* as follows: "At no time since 1862 has there been such a marked falling off in our exports as during the past year. The total decrease to all parts of the East is no less than—in plain cottons, 214,889,238 yards; in dyed and coloured, 23,040,078 yards; total, 237,929,316 yards; and in twist, 8,531,700 lb. weight. The only increase, we may say, is to Java, and the large shipments of printed cottons to these ports make the net total shipments of prints to all the East an increase of 4,310,338 yards. As this shrinkage represents a money value of quite 2¼ millions sterling, it is a very serious question for the Manchester district." Messrs. Nott & Co. appear to have overlooked the expansion which had occurred—as shown in the above table—in our trade with Ceylon and Rangoon. In further proof of this, particularly as regards Burmah, I may state that according to official returns the imports of cotton piece goods into the country last named during the seven months ended October 31st last were of the value of 10,928,310 rupees, as compared with 9,513,490 rupees and 8,254,950 rupees for the corresponding periods of 1890 and 1889 respectively.

year last named 18,121,000 yards of Indian piece goods went from Bombay to Zanzibar and Mozambique, *and* 11¼ *million yards of Manchester piece goods went along with them from the same port.*

Now, why a great portion of Lancashire's productions for the East Coast of Africa should be sent roundabout, *viâ* Bombay, and through the hands of its native merchants, instead of going direct from our manufacturers and merchants, to their correspondents or their own branches in Zanzibar and elsewhere on the East Coast, is a question which is freely asked without any apparent attempt being made to prove that the latter course would be better for ourselves and consumers alike. The present volume of this coast trade and the dimensions to which it is likely to grow in the future are important enough to deserve of merchants some serious consideration of the means best calculated to secure a more intimate local share therein. The recent imposition of a 5 per cent duty upon all goods imported into German East Africa must undoubtedly exercise a prejudicial influence upon both Bombay and Lancashire interests in the flourishing trade hitherto done with the South-East Coast from the grand distributing centre, or, as the Americans would say, the "dumping" ground of Zanzibar, the newly-arranged British share in the control of which must be highly gratifying to Manchester.

As regards the territory of the British East Africa Company to the north, it enjoys, so far, few of the facilities with which the German East Africa Company counts in the south. The latter country is served from several ports; the interior is well watered and easily accessible; and it boasts, *sui generis*, a fairly advanced state of civilisation. The northern country, *per contra*, possesses only one entrance upon which we may depend for communication with the lakes, and that is the temporarily rising port of Mombas. I say "temporarily rising port," because upon the steadily increasing flow inwards of merchandise and outwards of produce depends its further and established prosperity.

This much-to-be-desired state, however, is not yet nearly assured, for the character of the country behind Mombas, both from the difficulties presented by its physical conformation and the turbulence of its population, is opposed to the facile passage of merchandise either to or from the lakes. The construction of trade routes has been, and doubtless is, largely in contemplation, but for all practical commercial purposes the country still remains unopened, and offers obstacles of magnitude to our free communication with the important distributing centres of the more densely-populated interior.

Since writing the foregoing a serious disaster has befallen German arms to the south, and we ourselves have been threatened with the collapse of the British East Africa Company, owing to its confessed inability to conquer, in the absence of State aid, the difficulties to which I have just drawn your attention.

Harking back to India, the cotton industry in Bengal only lightly claims our attention in the improbability that it will ever assume highly-important proportions—first, because of the ever-powerful position of its Western neighbour, and secondly, because as Bombay is the seat of the Indian cotton trade, in like manner Bengal monopolises the manufacture of jute; and to the latter cotton must, for various reasons, always be subservient in the north-east. We must remember, however, that any cotton mills which may be erected hereafter in the neighbourhood of Calcutta will boast very considerable advantages over those first established. These occur particularly in the sense that though mills set up some twenty years ago cost, building and plant inclusive, at the rate of 42-45 rupees per spindle, very superior concerns can now be launched upon their career for about half the money. This is a fact which, in conjunction with the improved and less expensive transport facilities afforded by recent railway extensions between Calcutta and some of the cotton districts, should encourage a reasonable extension of the industry in the future, if mill management can be placed generally upon a more satisfactory footing than that upon which it has hitherto rested. The system, in some parts now abolished or in course of amendment, which promoted over-production for certain purposes of unenviable notoriety, was responsible more than any other factor for the paralysing vicissitudes through which the industry was long forced to struggle.

In the few remarks to which I purpose limiting myself upon the subject of jute and its manufacture, I may say, primarily, that from the natural resources of her provinces, Bengal secured to Calcutta, as the seat of its manufacture, advantages which no other country could afford. The capital invested so far in her cotton industry amounts to something less than 1,000,000 sterling, whilst the sum subscribed for the manufacture of her staple product, including that sunk in the various pressing companies, cannot fall far short of 5,000,000 sterling, and the hands directly employed in the spinning and weaving and pressing departments almost equal in number those engaged in the whole of the cotton mills of India.

Less than twenty years ago the total quantity of jute grown was about 2,700,000 bales, from an area of very much less than 1 million acres (925,899). Last year the crop used (Aug. 1, 1890, to July 31, 1891) amounted to 4,650,000 bales, from an area of 1½ to 1¾ million acres, 1¼ million bales being consumed by Bengal mills, and 3,400,000 bales were exported, against shipments of 1¾ million little more than ten years ago (1879-80), and considerably less than 2¾ millions (2,645,109) four years ago, (1887-8). To put it to you more simply, less than a million cwts. were exported thirty years ago, and last season 12 million cwts. were sent out of the country.

Turning to manufactures of the article, twenty years ago there were not 1,500 power looms for the weaving of jute in Bengal, and the total exports of bags made by hand and power did not exceed 6½ millions. Now there are 37 short of 8,000 looms, and nearly 160,000 spindles at work in 24 mills, and the total exports of gunnies last year (Jan.-Dec., 1890) to all internal and external markets were 170,800,000. In the decade the exports of manufactured jute to markets beyond India have increased by 126 per cent, *i.e.*, from a value of about 11 million rupees in 1881-82 to nearly 25 million rupees in 1890-91, and in the same years the shipment of gunnies and gunnie cloth has increased respectively from about 42 million bags and less than 1 million yards to 98¾ million bags and nearly 30 million yards.

The total number of bags exported to places in India outside the Bengal Presidency has increased just as rapidly (from 36,200,822 in 1889-90 to 53,370,394 in 1890-91), and the further success of this department at home depends largely upon railway extensions and the consequent agricultural development of the country, from which latter must spring an increased demand for gunnies. As regards external markets, Bengal has long since struck a vital blow at Dundee's trade in California, Australia, New Zealand, South Africa, Egypt, and various parts of South America, principally the western coast ports. In the future, Burmah, the Shan States, Siam, and China, must also contribute very appreciably to the further building up of her native strength and the ever-increasing prejudice of Dundee. In gunny cloth most of the foreign markets had until of late years drawn their supplies from the United Kingdom. So rapidly, however, has the Bengal industry advanced, that, at the present time, Calcutta, materially assisted by her geographical position, practically enjoys a monopoly, in so far as concerns the supply of coarse jute cloths to the chief markets of the world. In fact, into such a moribund condition has the manufacture of coarse bagging fallen in the United Kingdom that none is now made for export, and the major portion of our own requirements in such low qualities is actually supplied from Bengal.

It is, therefore, well for Bengal that she possesses this branch, amongst a very few others—such as her exports of raw jute, indigo, opium, hides, tea, and shellac—upon which she may rest with a certain amount of security; for the rapidly-rising importance of Bombay and Karachi, resulting, by railway extensions, from their greater proximity to large agricultural areas, from their comparative immunity from the paralysing port charges and river difficulties, &c., to which shipments *viâ* Calcutta are subject, and again, from the advantages they derive from their closer contact with Europe, has had of late years a very prejudicial effect upon the general trade of India's metropolis.[*] Her star appears to be setting in certain quarters as rapidly as those of Bombay, Karachi, Chittagong, and Rangoon are rising. Of recent years the increase in imports and exports of merchandise only through these latter ports has been as remarkable in its regular upward movement as has been the steady decline of Calcutta in several departments which contributed most substantially to the aforetime commercial supremacy of the "City of Palaces."

In the five years since 1886 the increase to which I have referred has been in the case of Bombay, 13·4 per cent; Karachi, [†]47·26; Rangoon, [†]56·2; and Chittagong, [†]36·57. In the case of Calcutta it has been only 6·9 per cent, attributable rather to her increased exports of raw and manufactured jute than to any expansion of her imports from Europe.

The crushing charges, in the shape of towage, pilotage, and railway rates, to which imports and exports *viâ* Calcutta were subject a year or two ago, directly assisted in the opening of Chittagong, by reason of its comparative cheapness, as a port for the export of jute. The diversion thus effected contributed later on to the steady growth of a general trade, which, in merchandise alone, inwards and outwards, increased from 8¼ million rupees in 1885-86 to over 15 million rupees in 1889-90, and the bulk of this trade formerly found its way through Calcutta. The competition of the Burmese ports for the rice trade, hitherto done through Calcutta, grows stronger year by year. Yet in 1885 tenders were invited for a preliminary loan of 7½ million rupees for the purpose of wet-dock construction at Kidderpore, the completion of which could not possibly cost less than 3½ million sterling; and this proposal, which appeared more than likely to involve imports and exports in still heavier charges, was made in the face of a trade fast drifting from the already most expensive port in India to find at last its natural entrance and exit through Bombay, Karachi, Chittagong, and the Burmese ports.

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[*] In reports to hand from the Central Provinces concerning the influence of railway extensions on trade development in those districts, it is noted that the movement of wheat from Chhattisgarh trebled, and of the total amount 98 per cent was consigned to Bombay. The opening of through communication with Calcutta from the Chhattisgarh country is particularly remarkable for the striking fact that it had practically no effect in changing the direction of the traffic, although the greater part of this tract is nearer Calcutta than Bombay. Of 1,114,345 maunds exported from Chhattisgarh, only 27,433 maunds were consigned to Calcutta. The linseed, like the wheat, was almost all taken by Bombay, the movement from Chhattisgarh increasing cent per cent.

[†] The disproportion existing between the values of the trade of Karachi, Rangoon, and Chittagong and that of Bombay and Calcutta should be taken into account when noting these percentages.

Having so far considered, amongst other matters, the work of our most doughty opponent, we may now turn to a very brief sketch of the progress of her satellites within her own domains. The *trading* rivalry of one of these (to which I shall shortly have occasion to refer more particularly) affects us generally in a very much more insidious fashion than does the mere spread of its manufactures. In the first place it is interesting to notice that while the increase of India's trade—imports and exports of merchandise—with the United Kingdom has been merely nominal during the past decade, that with many other countries with which she has commercial relations has very materially, in some cases enormously, expanded. For instance, Japan by 812·64 per cent; Germany, 627·52; Belgium, 185·33; Egypt, 162·62; East Coast of Africa, 74·94; United States of America, 74·1; Australia, 43·39; and with the United Kingdom, 15·45.*

In the last five years there has been a considerable diversion to Continental countries of trade hitherto done from India to the United Kingdom. The increase in our own direction has been only about 4½ per cent during that period, whilst Indian trade with other European countries has grown by about 26 per cent, for which Germany and Belgium have been mainly responsible.

India's exports to the United Kingdom for the year ending 31st March, 1891, fell short of the previous year's total by 16½ per cent. As the exports of India to all countries declined last year by only 3¼ per cent, it follows, even assuming the whole of the decline to have occurred with ourselves, that at least 13¼ per cent of the trade coming to us in 1889-90 found its way into other channels in 1890-91.

For present purposes, however, it will suffice to note the very striking advances made in Indian trade by Germany, Belgium, Austria, and the United States of America. Taking Germany first, we find that her exports to India, which five years ago amounted to less than 1¾ million rupees (1,603,000), advanced with extraordinary rapidity until they reached, last year, a total very little short of 17 millions (16,916,490), or a tenfold increase in general trade within five years, last year's advance being at the rate of 200 per cent over the trade for the previous twelve months (principally in hardware, cutlery, matches, steel, woollen goods, sugar, and salt, the success of which latter is exercising a very prejudicial influence upon shipments thereof from Liverpool).

Germany's imports from India have increased in a similarly remarkable fashion, viz., from 7,713,100 rupees in 1886-7 to 43,874,482 rupees in 1890-91. This shows an advance of nearly 470 per cent in the five years, and 59 per cent in 1890-91 over

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* These percentages are those to which I make particular reference in my remarks, "My only purpose," &c., on page 251.

1889-90 (principally cotton, rice, hides, jute, and seeds). The improved means of communication now established between India and Germany—more direct than any previously existing—are distinctly in favour of a continued expansion of trade both ways.

India's trade with Belgium has advanced 44 per cent in five years, and her last year's imports were larger by nearly 12 per cent than those of the previous twelve months (the increase being mainly in dyes, glassware, steel, &c.).

Exports from Austria to India increased in the twelve months ending March 31, 1891, by 18 per cent, mainly in apparel, cotton yarn, dyes, hardware, cutlery, woollens, and sugar.

India's trade with the United States of America, both import and export, has very steadily increased from year to year; and with reference to exports of Transatlantic cotton piece goods to India, we see that from about half a million yards shipped in the four months, January 1 to April 30, 1889, they had jumped at a bound to over 2 million yards for the corresponding period in 1890, our own exports in the latter year being about 8½ per cent less than they were in 1889 (61 million yards) during similar periods.

Going beyond our point for a moment, a still more remarkable fact is that though America sent to China in the four months, January to April, 1889, barely six million yards, her shipments for the similar period of 1890 totalled close upon 37½ millions, the increase in our own shipments during the same four months being the comparatively insignificant one of 18½ millions on a trade six times larger than that of America. My only purpose in the introduction of America's cotton goods trade with China, and various of the percentages* quoted in connection with India's expanding commerce with Continental countries, is that of marking the respect in which such progress should be held. We may hug ourselves contentedly when we remember the enormous disproportion existing between the magnitude of our own trade and that of Continental and Transatlantic rivals. At the same time we cannot ignore the fact that small beginnings—like the cotton and jute industries in India and Japan, without going further for comparisons—are often responsible in the end for widely-spreading and largely-controlling influences. Our experience, however, of the results achievable by the intelligent, active, and full employment of Lancashire's manufacturing and trading strength should be sufficient to free us from any fear of much of this foreign competition, though it would be the worst of generalship did we, with dogged conservatism and blind unbelief in the opposition, despise advances hitherto insignificant, but which are now assuming comparatively important proportions.

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* See percentages on page 250.

A fortnight ago I had the honour to be included in the audience which assembled in the boardroom of the Manchester Chamber of Commerce for the purpose of hearing Mr. C. L. Tupper's address to the members of your Society on "Recent Agricultural Progress in India." The discussion which ensued at the close of his paper included a question of sufficient originality to merit a passing reference here. As no satisfactory reply thereto was then afforded, the present opportunity serves to bring the question before you once more, and permits me to offer a little information and venture a hypothesis which may, perhaps, help to dispel the doubt which then appeared to prevail. The question was founded upon the difficulties by which we were beset during the period of internecine struggle in America and the consequent cotton famine in Lancashire, and was as follows: "Why did not India in the present day largely increase her acreage under cotton, in order that free supplies might be available for Lancashire in the event of American ports being closed against her at any future time by conditions such as those which obtained in 1861-3?" Now, on the face of it, such a suggestion savours somewhat largely of an interest entirely beyond any fundamental consideration for the immediate or eventual benefit of the cultivator. India, evidently, is expected to increase her acreage and produce each year a supply of raw material substantially in excess of current requirements, and to rid herself of which annual surplus she would experience insuperable difficulty, solely in order that on the highly-improbable chance of America's ports being blockaded against us at any time in the indefinite future, we might have ready at hand a supply upon which we could freely draw in our extremity.

The fact is that the advancing consumption of Indian cotton by native mills, in conjunction with increased exports of the raw material for manufacture in Asiatic markets and—most important of all—on the continent of Europe, is tending to the rapid diminution of its shipment to England. The Continental markets are of much higher value to India than is Lancashire, because, in the first place, Bombay and other mills have supplanted ourselves in the supply of that demand for coarse yarns and cloths for which we previously catered. Our demand for the raw material has thus been turned upon the longer staples of America and the Brazils to the growing exclusion of the Indian article. Much of our machinery is now adapted for the treatment of long staple only, whilst the former is in constant request in Continental mills for the manufacture of the coarse cotton clothing generally worn by peasantry and workpeople in Italy, France, Belgium, Germany, and Austria, but which is entirely unsuited to our own home trade.

In the official year of 1887-8 we took some 2.140,000cwts. of the various classes of Indian cotton, but in the past fiscal year our imports little more than exceeded 1,500,000cwts, a quantity representing, firstly, a shrinkage of nearly 30 per cent, and, secondly, only 12 per cent, or less than an eighth part, of India's total exports. In the meantime the exports to Italy, Austria, Belgium, France, Germany, and Spain had all materially increased, the continent of Europe receiving in the twelve months ending March 31, 1891, no less than 4,144,000cwts, representing 82 per cent of India's total exports, the remaining 6 per cent of which went to China, Japan, and the Straits.*

So with reference to the question proposed to Mr. Tupper, it is clear that if any strong inducement be held out to India to increase in the future her acreage under cotton for export purposes, it must proceed from Continental markets if the full supply of their requirements should suffer a check by reason, amongst others, of the greater consumption of the raw material in native mills, or its better appreciation and enhanced values—due to an eventual reduction in America's cotton acreage—amongst Lancashire and other consumers.

In connection with this subject of cotton cultivation, an opinion—born of the question to which I have just referred—was adventured that, for the sake of the Lancashire custom to which such efforts might give birth, India should endeavour to produce a raw material akin in quality to "Sea Island" in certain districts on her seaboard, which, from the atmospheric and other favourable conditions by which they are governed, would appear to offer distinct possibilities for the successful cultivation of a longer staple and finer quality. This, however, is a suggestion in which, I am very much afraid, few Lancashire manufacturers could be induced to join. India has already furnished us with adequate examples of her capabilities, both in an ordinary way, with her own spinnings, and also in a somewhat startling fashion when equipped with sinews of war such as American and Egyptian cottons provide; and the results achieved are highly portentous of what she *may* do if ever she produce a raw material of a quality sufficiently good to render her independent of the imported article.

The production of such cotton would be in the first place for the satisfaction of her own requirements, and afterwards for the needs of outsiders. In the existing state of affairs the opinion gains ground with those who have thought upon the subject, that if India take seriously to the manufacture of medium and finer classes—and there is no incontrovertible reason why she should not do so—her importation of Egyptian cotton, so far insignificant, is likely to grow enormously.

By specimens sent home to us of cloths woven from 40's twist and 50's Egyptian weft, India has already afforded proof positive of what her mills are capable of turning out in the finer qualities. With the increased importation of Egyptian and American cotton which must naturally follow upon such results, her attention may be directed to the possibilities afforded by such districts as those to which I have referred. Her imports from abroad will afterwards continue only until such times as her soil shall have produced sufficient material for the adequate supply of her own mills.

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* Exports of cotton from Bombay to Great Britain—January 1 to December 31: 1889, 392,000; 1890, 344,000; 1891, 103,000 bales of 392lb.

This end attained, the prejudice to ourselves will be twofold—*i.e.*, in both yarns and cloths—for the increase in our exports of classes in which there is no present Indian competition (and which qualities are shipped in comparatively small quantities) has not been sufficient to compensate for the decline in our exports of sorts turned out by Indian mills. Existing circumstances appear to favour the impression that by the continued development of the native industry and the important results towards which ambitious energy and enterprise are carrying it, we shall, with India's further draughts of the raw material from Egypt and America, and her eventual cultivation of similar staples, be forced to face, in our better trade, conditions akin to those with which we are confronted by her current competition.

With regard to this rivalry, the disadvantages with which Indian millowners have to contend are few, the most important being (1) the importation of costly machinery; (2) an exceedingly heavy fuel account; and (3) the inferior skill of her operatives. The second and third of these will be largely removed in the course of time, the former completely, as explained in a previous portion of this paper, and the latter very materially by the improvement which occurs in successive generations under capable direction.

On the other hand, the advantages with which Indian millowners count are fourfold (1) the raw material at their own doors, (2) their factory laws, (3) cheap labour, and (4) their geographical position, inasmuch as concerns trade with those external markets previously mentioned, and for the favour of which they are now successfully bidding. These are opposing forces of the most undeniable kind, against the general effects of which, in certain departments, it is unlikely that we shall prevail. It behoves us, therefore, to seek compensation by facilitating to the fullest possible extent the breaking up of new ground and the opening of markets for our productions in Burmah, the Shan States, Siam, Western China, and Africa.

In speaking a little while ago of the German advance upon India, I said I should have occasion to refer to a rivalry which affects us generally in a very much more insidious fashion than the mere spread of her manufactures.

The monopoly of the import and export trade of India, enjoyed until recent years by British traders, has been permanently wrecked by minor forces, the persevering onslaughts of which—from the perfection of their organisation—have finally prevailed against a position hitherto fondly imagined by ourselves to be proof against the most obstinate siege.

Built upon such bed-rock foundations as our possession of the country, priority in the control of her trade, and our national power as manufacturers, our commercial position in India should never have been shaken. If we, as traders, had marched with the times it should have been stronger to-day than ever before, and absolutely insensible to shocks of no importance individually, but the multiplication of which has finally opened the widest of breaches in our outer defences. Through these gaps rivals pour with the avowed object of dispersing still more seriously British trade influences in our great dependency, and now we are face to face with conditions of greater import to our future *as merchants* than any by which we were ever previously confronted.

It is widely recognised by travellers in the East that German competition in its trading branches—a competition incomparably keener than that of its manufactures—is rampant from the Persian Gulf to the north of Nippon, and, in India, is working us an amount of prejudice from the enduring effects of which none but our strongest efforts and a radical change of methods can serve to protect us.

During the last thirty years local conditions, both commercial and social, have been altered so extensively in India that an "old-time" merchant would hardly know his way about were he suddenly returned to the scenes of his youth.

Whilst Young Germany studied the possibilities offered by India for commercial victories, the attention of Young England was engaged in the side issues, so to speak, of his own social improvement. This important question continued to absorb him very extensively—so much so, in fact, as to blind him until recently to the sapping of British commercial strength by advanced methods, with his own adoption of which there was nothing to interfere had his eyes been directed more closely to the protection of trade interests, and less intently bent upon the mere cultivation of a more enjoyable life in India.

Affairs have thus progressed, until at last a thorn has been planted in the sides of British merchants which must burrow deeper, and eventually pierce vitally, unless strong measures be seriously considered and unhesitatingly employed to arrest its inward course. A monopoly of Indian trade is, of course, a thing of the past. The means, however, which have contributed so materially to the establishment of existing German influence (as well as to the rapidly-rising native power) in the commerce of India are not reserved. Their adoption is open to the world. If, therefore, we cannot profit by the lesson their lead has afforded, in combination with such improvements thereupon as may occur to us, to strengthen a somewhat weak-kneed position, it only remains for us to bow with the necessary humility, and confess that at last we have met our commercial superiors.

The Germans, along with others of their Continental neighbours, enjoy opportunities in their education for foreign service which are so far denied to ourselves. When a schoolboy in Germany signifies his intention of embarking eventually upon a commercial career abroad, his early assimilation with the natives upon his arrival in the country of his choice is pre-assured by special courses of study which bring him nearly in touch with them before he leaves the Fatherland.

These special studies comprise, amongst other subjects, the history of the country to which he goes, and the character of its people, its productions and industries, imports, exports, and language.

Upon his subsequent transplantation from the Fatherland to what he no longer looks upon as a "foreign country," he finds himself immediately *en rapport* with the natives, and a few short months of practice complete the assimilation for which he has been theoretically prepared at home.

The local advantages with which such a knowledge endows its possessor are sufficiently obvious to dispense with any extensive comment of mine. Opposed, however, to this superior class of competition there are hundreds of Englishmen abroad, particularly in the East, who form no preliminary acquaintance with languages, countries, or peoples before their expatriation, and, beyond the detail of the circumscribed commercial and social spheres in which they have revolved, are scarcely more practically or extensively informed when they return.

In the majority of cases they never lay themselves out for the acquirement of that knowledge of native languages and customs in the rudiments of which their rivals are well versed before they reach the country, and the completion of which, by local experience, quickly enables them to dispense with interpreters whose assistance is oftentimes, and for various reasons, of a distinctly qualified character.

One other great advantage of the German system is that it largely prevents those abominable exhibitions of brutal contempt and intolerance which only too frequently distinguish our own intercourse with natives whose education becomes more advanced day by day, and who are generally the intellectual superiors of those by whom they are so grossly abused.

Young England too often goes to the East imbued with the traditional idea that the "native" was beneficently provided for the sole purpose of affording an adequate foil to our own general and immeasurable superiority.

Unfortunately, a practical acquaintance with the many admirable qualities of our swarthy dependents does not always assist in the dispersion of this original prejudice, and to its ever-ready display, both gratuitously and upon the slightest provocation, must be attributed the major portion of the general aversion in which we are held by thousands of Hindoos in the present day. From a multiplicity of examples which have come within the range of my personal observation, I will merely instance two as typical of the majority.

1. I happened on one occasion to be in the offices of a leading English firm in the capital of a presidency which, for obvious reasons, shall be nameless. Time, 4-30 p.m. Enter to the stockkeeper (an Englishman) a native dealer clothed in half-a-crown's worth of Manchester cotton, and a diamond ring for which a couple of hundred pounds might have been vainly offered. The dealer is a valuable connection of the firm, his bank account nearly approaches six figures, and he has just bought fifty bales of shirtings. He presents his purchase-note for the stockkeeper's countersign, in order that his coolies may take delivery of the goods—of which he is in pressing need—from the native "go-down" assistants or warehousemen, under the supervision of the stockkeeper. The latter, who is engaged to partner Mrs. Lightfoot at five sharp in a handicap set at the Gymkhana, tears the purchase-note from the dealer's hand, and, flinging it into his face, consigns him *pro tem.* to a region compared with which India must be a chilly country, and bids him return on the morrow!

2. A year or two ago a Brahmin, of University education and highly esteemed in commercial circles in Calcutta, came over to this city in the interests of a firm in which he controlled with recognised ability a leading department. An Englishman of some years' Indian experience, who had known the native referred to in Calcutta, happened to be sojourning in Manchester during the same period. Discussing one day the coincident presence of his Indian acquaintance in this city, he expressed his contempt for the courtesy accorded to the "nigger" by his correspondents here, and said that at home (*i.e.*, in Calcutta) he would be ordered and kicked about the office by the junior English assistant with as little consideration as that usually displayed for a pariah.

Now, I happen to know perfectly well that such would not have been the case; but the incident lends, as Gilbert says, verisimilitude to the bald fact I have previously stated. We are ever ready to criticise existing caste prejudices amongst the various sects of India, but we are blind at the same time to the control exercised over ourselves by similar influences and the evils for which they are responsible. Not the least of these evils is the injury done to a merchant's business by the rancour of his servants, of which, generally, he is very incompletely informed.

The results would not be so deplorable could they be confined strictly to the detriment of individual culprits. This, unfortunately, is not to be expected, and the slighted and insulted natives ban our race.

With regard to English commercial travellers in the East, they enjoy advantages for observation which are not entirely at the command of resident English assistants. Their sojourns in the principal commercial cities of India are not sufficiently extended to permit of their energies being diverted from the main issue by social claims, the influence of which in resident cases only too frequently becomes paramount.

Their periodical absences serve to bring up the more strikingly before them upon their return the changes through which the country and its peoples have been passing in the interim, and my own observation teaches me that in a general sense they are more closely in touch with the masses than are the resident assistants of English firms in India.

It was stated a short time since that, while German commercial travellers might be seen in every bazaar in India transacting business with the small native shopkeeper, our own travellers journeyed through the land in lordly fashion, driving hard bargains with Rajah and Nawab, but never venturing to touch the important question of trade with the teeming millions of our great dependency. Speaking from a very extensive and intimate acquaintance with German and English commercial travellers, both inside and outside of Eastern bazaars, I am compelled to differ completely from the statement quoted. It might be said with as near an approach to hard fact that John Smith and Co.'s travellers were driving hard bargains with Prince Henry of Battenberg and the Duke of Cambridge, whilst their Teutonic rivals were sweating away amongst the small shopkeepers of a fourth-rate thoroughfare in Manchester.

It is true that the number of our commercial travellers in India is, comparatively, limited. Against a single English bagman to be met with in the native quarters prior to the enforcement of the resolution of the Native Piece Goods Dealers' Association, in June, 1887, by the terms of which foreign merchants and their assistants were forbidden the bazaars (with a view to trade), under penalties, one could usually place two, and sometimes three, Germans. Whilst the resident German assistant was to be found amongst the natives daily, his English rival rarely visited the malodorous bazaars, and left the outside care of customers to the native assistants of the firm. The Englishman clings in the majority of cases to the beaten track. The German commercial traveller, *per contra*, goes fossicking about in what appear to us to be all sorts of out-of-the-way odd corners of the East. These, however, are just the very spots in which he is laying the foundations of a trade that, in the absence of our own reformation, shall rise up against us in the future and "smite us mightily, hip and thigh."

Insignificant orders of a troublesome kind, oftentimes curtly declined by an English "commercial," are conditionally accepted by the German, with the same grace and attention as that with which he receives his important commissions. For the sake of a profitable trade which *may* follow upon the satisfactory execution of such lines, the German merchant or manufacturer is no less assiduous than his representative in the care bestowed upon them, and thus the prejudice to ourselves grows apace.

The way in which English merchants and manufacturers constantly thwart their best interests by a studied disregard of the well-considered suggestions of their representatives abroad is intensely discouraging to those who are forced to struggle against rival methods of a superior kind. Sufficient confidence is felt in certain men to send them out beyond the seas for the purpose of studying markets and furnishing information as to the means best calculated to secure a profitable trade. If, therefore, consistency is of any value whatever in the successful conduct of commercial affairs, the deeply-pondered recommendations of such men should meet with the consideration they properly deserve. It is against all common sense to suppose that special makes, designs, tickets, colours, packing, &c., would be proposed unless it had been found that a strict compliance with such suggestions was absolutely imperative for the satisfactory fulfilment of dealers' requirements and the insurance of a mutually agreeable and progressive trade in the future.

It is useless to attempt to foist upon consumers, in opposition to their practical knowledge of what is best for themselves, our ideas of styles most suitable for their markets. Unfortunately, when a due appreciation of the futility of these antagonistic efforts eventually dawns upon those concerned, it is discovered that their dogged obstinacy has not only entailed a pitiable waste of their representatives' time, strength, and patience, and their own money, but has also involved them so deeply in the prejudices of dealers as to enable more progressive rivals to step in and establish positions which, by the opportune repudiation of methods no longer serviceable, might easily have been secured to themselves.

To meet the competition of the times, and to fit the present and rising generations for the struggles before them, it has been found necessary to establish throughout the country institutions for the spread of a technical education amongst the masses. By fully availing itself of the facilities now provided for such improvement, England's future position in the van of manfacturing progress should be beyond question.

If, however, our position as traders, as merchants, be further impaired, the benefits arising from our greater industrial strength will be reaped by other hands than our own.

The Lancashire merchant is not as necessary to the Lancashire manufacturer as is the latter to the former. Failing the medium of the Lancashire merchant, orders from abroad must reach our manufacturing centres through the hands of competitors. Without the Lancashire manufacturer the Lancashire merchant would be in as poor a plight as a ship at sea without sails.

It is clear, therefore, that although there must always be a certain amount of stability about the position of our manufacturers, due to a support drawn from various sources, that of the Lancashire *trader* depends entirely upon his own resistive power for its protection against attacks from without.

How is this support, now perceptibly trembling, to be definitely assured in the future? By the early organisation of a system of commercial education which shall fit the youth of Manchester to take his place in the Eastern and other foreign markets on equal terms with the best of his competitors. The time must eventually arrive, and it cannot be very long delayed, when the maintenance of our position as traders will be impossible if our aspirants to commercial careers beyond the seas have not already laid at home substantial foundations for the rapid acquirement abroad of such intimate knowledge of the countries and their languages and requirements as will enable them to stand on the spot and place merchants at home upon a footing at least equal, if not superior, to that upon which many of their rivals are already established.

A little while ago the Bishop of Salford said that "the law of self-preservation is a law for nations as well as for individuals, and the present struggle for national existence depends upon the commercial and industrial *status* of a country and her hold upon the markets of the world. These are found to depend in a large measure upon the excellence and fitness of her system of popular education."

We cannot hope to make a system of what I may call Eastern commercial education "popular" in the sense in which the Bishop wrote. There is, however, absolutely no reason why certain subjects, such as those included in Continental systems of commercial education, should not constitute a part of the Manchester *curriculum*, and occupy as prominent and well-supported a position in certain of our schools as do the industrial subjects of spinning, weaving, bleaching, printing and dyeing, &c., in our Technical Institutions.

The growing competition renders such a provision absolutely necessary, and the sooner it is made the sooner shall we be freed from the unceasing local growls against foreign advances in markets our position in which, as previously remarked, had hitherto been looked upon as impregnable.

Before being appointed to the various provinces of India, candidates for the Civil Service of that country are obliged to pass satisfactorily examinations upon studies compared with which a course such as that I have suggested is a mere bagatelle, both as regards the expense and the mental application and development it entails.

The acquirement of the specified knowledge rigorously demanded by the rules of the Service offers no insuperable difficulties to those whose course of training is intelligently directed. The point, however, to which I desire to draw your particular attention is as follows: That candidates for official careers in India are not considered to be fit for the partial control of the districts to which they may be directed unless moderately well acquainted before leaving England with the language of the people over whom they may be appointed to rule. If such a knowledge be deemed absolutely essential for the satisfactory conduct of State Departments in India, it cannot be any the less vital to our success *as traders* with the peoples of that country. The introduction, therefore, of Oriental professors to the youth of Manchester should be one of the primary concerns of those who have contributed so admirably by their initiation of improved educational methods towards the maintenance of Lancashire's supremacy and continued prosperity in her manufacturing departments.

In conclusion, if there is one branch of knowledge more than another in which our countrymen are singularly deficient, it is in the department of "Commercial Geography," and the constant efforts of your Society for our improvement in this respect should command the closest attention and fullest acknowledgment of those in whose interest the good work is mainly carried on.

Archibald Forbes, who has "put a girdle round about the earth" more than once—though it took him more than forty minutes in which to do it—has declared that a few years ago he saw an envelope addressed by the editor of one of London's leading illustrated papers to his special artist at the "Sydney Exhibition, *New Zealand*." He further tells the story against himself that, for months after he had grown familiar with Australian geography by personal travel in that continent, every mail brought him shame and confusion because of superscriptions borne by envelopes directed to himself which were copied from an address he had left behind him upon his departure from England, and which ran "c/o *The Argus* Office, Melbourne, *South Australia*."

When I returned from Manila, after my first visit to the Philippine Islands in 1884, I was asked by several otherwise well-informed people "How I had liked *Spain*?" They seemed to have a vague idea that in some indefinite way the capital of

Luzon was bound up with the land of Cervantes and Lope de Vega, but its exact geographical position was a league or two beyond them!

A Manchester evening paper, which, in some of its leaderettes, is nothing if not facetious, was responsible the other day for the statement, included in an editorial upon a recent address of the President of the Manchester Chamber of Commerce, that "in the event of something odd happening in a remote South American republic, the position of such a republic upon the map of the world could probably not be correctly defined by one out of every ten ordinary commercial men."

This is what our American cousins would describe as "a very large order;" but, seriously, the charge is a grave one. If, therefore, we would successfully repudiate this aspersion upon our intelligence and rout the disadvantages entailed by the ignorance of which "nine out of every ten ordinary commercial men" are accused, a great deal more attention must be paid than has hitherto been the case to the very important subject under discussion. If a man's geographical researches have been of such a superficial character as to preclude his facile indication upon the map of the positions held by the countries and their provinces with which, directly or indirectly, he has been trading, it seems only reasonable to suppose that his studies of the resources of such countries and the character and necessities of their peoples—all highly-important knowledge for commercial success—must have been of a very meagre description.

How a man—I refer now particularly to *employés*—can continue to be concerned in trade with countries beyond the seas without feeling himself to be at least theoretically in touch with the natives is a point somewhat difficult of comprehension. That he should, so far, have been content to grope in the dark, and work with comparatively unknown quantities, has been largely due to the hitherto unsatisfactory system of general commercial education in this country as compared with that of our Continental competitors.

The final dispersion by unimpeachable testimony of a hitherto fondly-nourished unbelief in rival progress in the four quarters of the globe has led to our present appreciation of the methods which have most materially contributed to such advances. The knowledge thus bought of hard experience has been responsible in an important measure for the admirably vigorous efforts which have been put forth of late to bring within reach of budding British traders and manufacturers educational advantages equal to those with which their Continental competitors have long since counted.

These initial endeavours are an earnest, now that the nation has been finally aroused to a just valuation of the vital interests involved, of a serious and undivertible determination to leave nothing unattempted in the special branches of education to which I have referred for the maintenance of that general commercial supremacy hitherto enjoyed by British merchants and manufacturers throughout the markets of the world. If, therefore, coming generations fail to cope successfully with foreign rivalry in the international race for trade laurels, their defeat cannot be rightly charged to the trainers who are now endeavouring so earnestly to fit the youth of the country, both physically and mentally, for coming struggles keener than any of which we have had previous knowledge and experience.

Mr. J. Scott Keltie read a paper on "Recent Progress of Geographical Education in England" at the British Association Meeting. The author referred to the various efforts made during the past twenty-five years by the Royal Geographical Society to improve the position of geography in education, and to raise the prevailing conception of the subject. He spoke in some detail of the results of the efforts begun in 1884. He pointed out the improved position of the subject in elementary and normal schools; he showed that even in middle class and our great public schools the subject is now treated with more respect than was formerly the case; but the Society had especially to congratulate itself on the fact that it had succeeded in obtaining recognition of the subject in the universities of Oxford and Cambridge. The author also referred to the efforts of the Manchester and Scottish Geographical Societies, and to the fact that the prevailing conception of the subject has been greatly elevated, and that in various ways geography was now recognised in this country as a valuable handmaid to science, history, politics, and commerce.—*Proceedings of the Royal Geographical Society, October, 1891.*

The Huelva International Congress of Americanists.—This congress will be held at Huelva, in the Convent of the Rábida, from 6th to 12th October, 1892. The last International Congress of Americanists, held at Paris, decided that the place of meeting for its next session should be selected by the Spanish Government. The Convent of Santa Maria de la Rábida (province of Huelva) has been chosen for this ninth session of the congress. The present congress has a double object—(1) To contribute to the progress of scientific studies relative to the two Americas, especially of the time anterior and immediately posterior to Christopher Columbus; (2) To establish personal relations among Americanists. The following questions will be submitted for discussion. History and Geography: (1) On the name America. (2) Latest researches on the history and the voyages of Christopher Columbus. (3) Of the influence produced on the organisation of the Indian communities of North America by the arrival of Europeans, &c. Archæology: (1) To point out the analogies which exist between the pre-Columbian civilisations and the Asiatic (China, Japan, Malaysia, Chaldea, and Assyria). (2) To make known the most recent discoveries which have been made of the mound-buildings of North America, and the conclusions which can be drawn from them concerning the civilisation of their constructors. (3) What are the ancient populations of the Isthmus of Panama which have left the collection of pottery which now may be seen at Yale College and in the Smithsonian Institution? (4) What connections are there between the different kinds of pottery of America? Anthropology and Ethnography: (1) Nomenclature of the nations and tribes of America before the conquest. (2) New discoveries relative to the American quaternary man, &c.

SWEDISH EMBROIDERIES.

(By permission of the Editor of *The Textile Mercury.*)

Sweden is a country which differs from many other civilised countries in that its inhabitants carefully preserve many peculiarities of dress and manners. The country people delight to wear their native costumes, instead of foolishly aping the fashions of the towns. In the bathing places on the North Sea and the Baltic stylish Swedish ladies vie with one another in their original toilettes of native origin, which are often graceful and always exceedingly picturesque. The children are often seen attired in the becoming costumes of Dalecarlia and Schonen, and even their dolls wear the curious pointed caps and variegated aprons of the country women. Everywhere in the shops of the larger towns of Sweden are exhibited embroideries and stuffs of very peculiar design, and strong but harmonious colouring. These are modern products made at home, which have been intelligently and successfully wrought out after good old models, so as to suit the needs of to-day. Even now, as in very early times, most of these products—not all—come from the South Swedish provinces of Skane or Schonen, the business having now been taken in hand by wide-awake firms in Stockholm, Lund, and Gothenburg. The most prominent of these firms are the company of Hand-arbetets-vanner, in Stockholm, and Thora Kulle, in Lund. But goods of

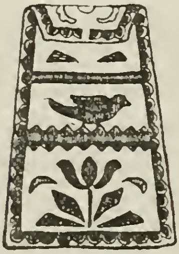

Fig 1.

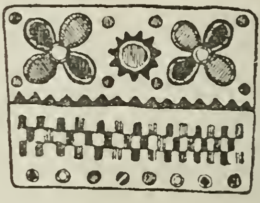

Fig 2.

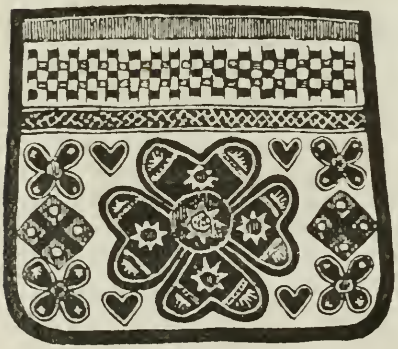

Fig 3.

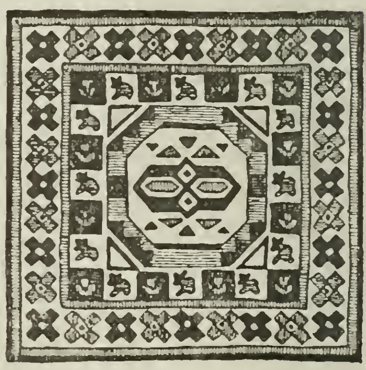

Fig 4.

capital quality are offered also by the firms of Ellen Ahlberg, in Göteborg, Borgs Söner, in Lund, the Skola for Hemslöid, in Göteborg, the Svensk Kunstloid-Utständning, in Stockholm, and others. All these articles—pocket-handkerchiefs and tablecloths, curtains and furniture stuffs, carpets, aprons, collars, cuffs, purses, and covers for cushions—are made by hand without the aid of machines, and are produced not in factories but at home, either by means of the embroidery needle, a sort of scissors, or on a peculiar loom of primitive construction, with upright warp, like the loom for Smyrna tie-carpets. Particularly charming are the little bags for money or keys, made partly of leather and partly of wool, and worn at the belt by ladies and children. They exhibit an interesting combination of plaiting and two kinds of embroidery. They strike not only by their general grace of form, but also by the exceedingly effective, lively, and yet harmonious colouring of their ornamental *motifs*,

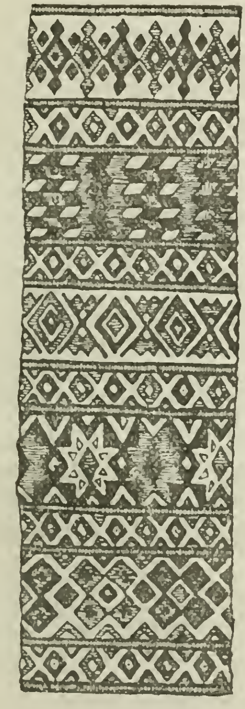

FIG 5.

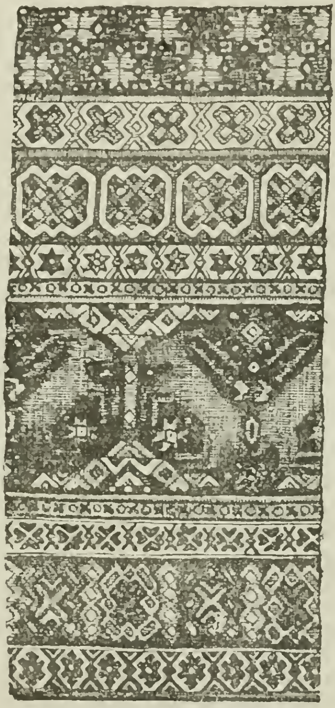

FIG. 6.

which are mostly geometric, the sharp outlines being agreeably softened by details which are either sewn on or embroidered. Figures 1 and 2 represent purses, and Fig. 3 a bag for keys. Of the articles produced on looms, the most important are the parti-coloured woollen stuffs, patterned with designs exhibiting generally horizontal stripes, and worked up into curtains, tablecloths, covers for furniture, and cushions. They almost uniformly show strict forms, mostly geometrical, sometimes vegetable *motifs*, or very *naïve* representations of animals or human beings, but always in such full harmonious tones that the impression is exceedingly agreeable. Fig. 4 represents part of a screen for a wall, embroidered after the Gobelins-stitch manner, by Ellen Ahlberg, of Göteborg; Fig. 5 a curtain fabric by the same; and Fig. 6 a curtain. We are indebted for these notes to an article by George Botticher, in the Leipzic *Monatschrift*.

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PROCEEDINGS OF THE SOCIETY.

JULY 1st TO SEPTEMBER 30th, 1891.

The 169th Meeting of the Society, held in the garden of Mr. Joel Wainwright, Finchwood, Compstall, on Saturday, July 11th, 1891, at 6-30 p.m., Mr. B. O'CONNOR in the chair.

Mr. WAINWRIGHT received the members at the Marple Station, and conducted them to a flower show in the schoolroom, where the groups of wild flowers collected by the children were very pleasing; then through Miss Hudson's gardens at Brabbins Hall; through the park and Compstall village; by the reservoirs, where wild ducks were noticed; through Mr. Woodman's grounds and Earncroft Woods, where the vast profusion of elder bloom on the trees, the deep gorges made by water action, and on the higher ground the fine sweep of mountain valleys, shut in by Werneth Low, were very much admired. The party were then conducted to Finchwood, where Mr. Wainwright and his sister extended their very gracious hospitality.

Mr. R. WADE proposed a vote of thanks to Mr. and Miss Wainwright for their hospitality, to Mr. Wainwright for his kindness in leading the party and obtaining permission to go through so many private grounds, and to those who had given that permission. The motion was seconded and supported by Mr. C. H. Stott, Mr. W. Aldred, Mr. Robert Smith, Mr. W. Johnson, Mr. J. Hudson, and Mr. W. T. Evans, and was carried with acclamation. Mr. WAINWRIGHT responded, and the visit terminated by return to Marple Station.

The 170th Meeting of the Society, held in the Pavilion, Eastham Ferry Hotel, on Wednesday, July 15th, 1891, at 1-30 p.m., His Worship the MAYOR of ROCHDALE (Councillor W. T. Heap) in the chair.

The members journeyed to Liverpool, by the Midland Railway, at 9-30 a.m., and found the ferry boat at 11. Arriving at Eastham, the Ship Canal works were visited, and, by the kindness of Mr. Manisty, the steamer Fanny was placed at the service of the members. A short excursion on the canal was made, and a visit paid, by permission, to Mr. S. R. Platt's beautiful yacht, Norseman. After this inspection, lunch was had at the Ferry Hotel. Some of the members emained at Eastham, taking a land journey along the canal to see the broken embankment, but the bulk of the party returned to Liverpool by the boat at two o'clock, and proceeded to the Museum of Japanese Art of Mr. Consul Bowes.

Mr. and Mrs. Bowes received the members with great kindness, and several hours were spent in the museum under the guidance of Mr. Bowes.

The members were also received by Dr. J. Murray Moore, who exhibited to them his very extraordinary collection of New Zealand curiosities and photographs. A few of the members had the opportunity of visiting the map printing works of Messrs. George Philip and Son, in Hope Street, under the guidance of Mr. J. F. Williams, and were very much pleased to see the processes of map production.

The Chairman (Rev. S. A. Steinthal), the Mayor of Rochdale, Mr. Councillor Sherratt, Mr. Nesbitt, and others expressed their thanks to all those who had enabled about 100 of the members to enjoy a very remarkable day. Thanks were ordered to be sent to Mr. Leader Williams, Mr. Manisty, Mr. Thompson. Mr. Consul Bowes, Dr. J. M. Moore, and Messrs. G. Philip and Son, for their kindness during the day.

The 171st Meeting of the Society, held in the Mayor's Parlour, Town Hall, on Tuesday, July 21st, 1891, at 3 p.m., the Rev. S. A. Steinthal in the chair, in the unavoidable absence of his worship the Mayor of Manchester.

Mr. DENIS DOYLE and two Gazaland Indunas, HULUHULU and UMTETI, addressed the members on the Mission to the Queen from Gungunhana, the chief of Gazaland and Mr. Doyle spoke of the geography and resources of the country.

Mr. DOYLE said : Mr. Chairman, I feel proud of meeting the distinguished citizens of a town like Manchester, and to say a few words to them about the country from which the envoys have come. When the citizens of a large manufacturing and industrial centre like this meet to honour them as they have done, it shows that they too are interested in the expansion of the British Empire. The success of our colonies would mean the success of commerce in England. It was anticipated that within a few years a large population would have occupied the northern portion of Gazaland, which was teeming with mineral wealth, and that from the occupation of that country would spring a large amount of commerce, larger than yet had been the case with other portions of South Africa. Given a gold industry it did not take long for a large population to accumulate, as was experienced in Johannesberg and the Australian cities ; and we had the evidence of experts that no country had been discovered which had the mineral wealth of Gazaland, Mashonaland and Matabeleland. With the gold industry there is no doubt about the future of the British South Africa Company. Agriculturally the country was more fertile than any other in South Africa, and eminently fitted for the occupation of Europeans. As large as France and Germany put together, well wooded, with beautiful fertile valleys extending in all directions with numerous streams running through them, it was difficult to imagine a country more suited to carry a large population. With the miner must necessarily come the farmer and the storekeeper. I will now describe the southern portion of Matabeleland, the first portion of the country entered by the British South Africa Company's forces. I claim for that company the greatest success in treks that has ever been accomplished in South Africa. A country supposed to be teeming with a hostile native population has been successfully occupied without a blow being struck or a shot fired in anger. This of itself speaks volumes for the future prospects of the company. As I was observing, the southerly portion of Matabeleland is one in which are situated the rich gold fields of Tati ; to the east of Tati is a tract of country, 100 miles wide, known to contain numerous and rich gold reefs, and the assays from these reefs have yielded satisfactory results. Hitherto it has been supposed that that portion was too unhealthy for occupation by Europeans, but I know that during the summer of last year a number of Europeans occupied that country, and their report is that it is as healthy as any portion of Matabeleland, and it is probable that this country within the next few years will see a large mining population. Leaving this portion and travelling further east, we enter into the rich valleys and fertile bottoms of the Monetsi, the Lundi, the Tokwe, and the Bube, a country very fertile, and calculated to grow many tropical products, including sugar, coffee, tea, and rice. This lower portion of the country has, of course, a reputation of being unhealthy, but if inhabitable by whites it cannot fail to attract the attention of the agricultural farmer, from its immense natural advantages and the fertility of its soil. Crossing the Lundi we suddenly commence to rise on to the high plateau of Mashonaland, and when the top is reached, after a gradual ascent of 2,000 feet, we emerge from the bush country and find ourselves with a great open expanse of country before us, undulating with patches of woods and bush here and there, the hills of Mount Wedza on the east and the hills of Matabeleland on the west. To describe this portion of the country as very beautiful is hardly to say enough for it. Splendid pasturage for cattle, sheep and horses, and fertile valleys with running streams every few miles. From here to Fort Salisbury the country changes but little, and, to use the words of a Dutch farmer, it would be difficult to find a place unsuited for building or farmers' sites. At Salisbury, which is the present capital of Mashonaland, we find a number of people settled. To the west and to the south we have the rich gold fields of Hartley Hill and Lo Mogundis. These gold fields were originally discovered by Carl Mauch, and subsequently by Thomas Baines, who endeavoured unsuccessfully to get a company to develop them. To the north of Salisbury we have again rich gold fields, known as the Mazoe gold fields. To the west of them again we have the Kaiser Wilhelm gold fields, and it is known that there are many other places carrying payable gold which have not yet been prospected. Leaving Mashonaland proper and proceeding eastward after passing Umtasa's kraal, we arrive at what is now known as the Umtali Valley, and find the country rich in minerals, and fertile beyond description, as the immense crops of cereals, potatoes, pumpkins, and native corn grown by the natives show, while honey is obtainable in large quantities, and it is here that many of the pioneers who first entered Mashonaland decided to remain. Beautiful and rich as Mashonaland is, it is exceeded in beauty and richness by Manica. The northern portion of Gazaland, of which this forms a part, is for 200 miles a country which should attract to it within the next few years a very large European population, as I know no country in South Africa so well fitted and so well adapted, and one that will return such good results as this portion of the country. Of course, before the agriculturist and farmer can be successful he must have a market. The market we anticipate will result from the amount of gold discovered, and there is no limit to the number of people who will flock into the country when it is known that satisfactory results have been obtained from the crushings. Much delay has occurred on account of the want of machinery for crushing the gold. Like all new countries in Africa, the roads during the wet season have been impassable. There have been difficulties with the Portuguese which now are settled, and the British South Africa Company have undertaken, or will, it is hoped, undertake the building of a tramway from Beira to Manica. This being accomplished the difficulties which have hitherto prevented the development of the country will be done away with, and a road opened by which heavy machinery will have easy access to the mines. The success of a new undertaking like this cannot be without some interest to the people of England, and especially to the people of a great manufacturing centre like this, because that success will mean increased commerce to England; will mean that there will be a field opened to which the surplus population of the country can emigrate; and there they will build up ties, build homes, and keep up connections with their English friends, and England, it is hoped, will maintain the position in commerce in South Africa to which she is entitled; and it is to be hoped within a very few years that the federation of all States in South Africa under the

Imperial flag will be an accomplished fact. We have heard much, and much has been said, about the unhealthiness of the climate. Well, I think the best reply that I can make to that is to give you the returns of the deaths since the occupation of the country by the Chartered Company's forces. The total deaths out of nearly a thousand men are fifteen recorded up to last month. In a new country one is subject to great hardships and much more roughing it than one is expected to undergo in more settled and older civilised communities, shortness of many of the necessities of life to which one is accustomed, all tend to make the lot of the early pioneer a hard one, and with the result that one not physically strong, or whose constitution has been injured earlier, cannot successfully combat the hardships he has to undergo ; but I venture to say from my experience of Matabeleland during last year that it will be found that the high plateau of Mashonaland and Manicaland, and the northern portions of Gazaland, will be as healthy for Europeans as any other portion of South Africa. The best time to enter the country would be between April and November. During these months the heat is less than at other portions of the year, and it is as well that people should gradually use themselves to the great change between the climate of a country like this and that of Mashonaland. In conclusion, I hope that the few words I have been able to say will show to the people of this country the vast value of the latest acquisition to the British sphere of influence, and I trust that influence will be used not only for our own good, but for the good of the enormous head of population that has by circumstances been placed under our control.

The addresses were illustrated by a large map of the country, and were very interesting.

Questions were asked and replied to by Mr. Doyle, and the thanks of the meeting were presented to Mr. DOYLE and the Indunas for their addresses, on the motion of the Rev. L. C. CASARTELLI, seconded by Mr. JOEL WAINWRIGHT, and supported by the Chevalier FROEHLICH.

During the day the chiefs were afforded the opportunity of seeing the Manchester Royal Exchange, the mills at Tatton Street of Messrs. R. Haworth and Co., the warehouses of Messrs. Watts and Co. and Messrs. Fallows and Keymer, and other places, and they frequently expressed their delight at what they saw.

The 172nd Meeting of the Society, held at Northwich, Monday, July 27th, 1891 Mr. Councillor SMALLMAN in the chair.

The members were received by Mr. T. C. Ward at Northwich, who conducted them over the subsided area, near Northwich, to a variety of houses cracked and broken by the sinking of the earth, and to the Baron's Quay Rock Salt Mine, 110 yards deep, with about 500 yards of working. The members went down the mine, and were very much interested to see the 300 miners at work. They were then shown the process of salt making both from rock salt and brine.

Lunch was provided by Mrs. Platt, and the members went on board the Volunteer, placed at their disposal by the River Weaver Trustees, through the kindness of Mr T. B. Hughes.

Mr. J. A. Saner, engineer of the Weaver Navigation, accompanied the party. The first point to call at was the Anderton lift. The principle and method of working were explained by Mr. Saner, and a practical exhibition was given by a boat being lifted from the Weaver to the canal above.

The steamer then proceeded to Weston Point, where the new locks into the Manchester Ship Canal, the sluice gates, and the embankment across the Weaver were seen.

The beauty of the well-wooded banks of the Weaver, "The Cheshire Rhine," and the considerable traffic on the river were a cause of astonishment to the majority of the members. Tea was provided on board by Mrs. Platt, and the members had a most interesting and enjoyable day.

Notice was taken of the death of the Honourable Algernon Egerton; the vote of condolence sent by the council was heartily concurred in, and the reply of Mrs. Egerton was read. The Secretary referred to the Geological Congress in Washington and the Geographical Congress in Berne.

Very hearty votes of thanks were passed to Mr. T. B. Hughes, Mr. T. Ward, Mr. T. C. Ward, and Mr. J. A. Saner. Mr. **Saner** and Mr. T. C. **Ward** responded.

The 173rd Meeting of the Society, held at Llangollen, Monday, August 10th, 1891. Mr. **Richard Davies** in the chair.

The members were led by Mr. Davies to Plas Newydd; by the canal to the Horseshoe Falls, the Church of Llantys, by the residences of Mr. Beyer and Sir Theodore Martin, to the Vallé Crucis Abbey. A most interesting and agreeable day was spent in a charming country.

Mr. **Chorlton** moved, and Mr. **Snaddon** seconded, a very hearty vote of thanks to Mr. Davies for his interesting and instructive description of the district and its topography and history, which was carried unanimously.

The 174th Meeting of the Society, held in Rouen, August 24th, 1891.

A party of members were led by Mr. H. Cruse through Normandy to Paris. A very enjoyable journey was the result, and the thanks of the members were heartily given to Mr. Cruse for his able leadership of the party.

The 175th Meeting of the Society, held at Berne, August 10th to 24th, 1891.

The Chairman (Rev. S. A. Steinthal), the Secretary, Mr. Darbishire, M. Gauthiot, Professor J. du Fief, and other members, took part in the International Congress of Geography, and some of them remained to see the festivities of the city in celebration of its seventh centenary. The Congress was interesting, and the celebration exceedingly picturesque and beautiful.

The following reports were subsequently read to the members, and are inserted here to complete the account of the Berne Congress:—

BERNE CONGRESS.

[Report of Chairman of the Council.]

Most people know the quaint old city of Berne, its arcaded streets, its fantastic fountains, its curious old clock tower, its bear-pit, its picturesque situation on the peninsula jutting into the River Aar, and its sublime view on to the snowy range of the Bernese Alps; but few Swiss tourists spend enough time within its walls to become familiar with its museums, rich especially in prehistoric specimens of the stone age, and of lake-dwelling builders, or with the rich intellectual life which characterises its present citizens. Your delegates to the International Geographical Congress, held there last August, had consequently a rather unusual pleasure in spending several days in the city, and as the celebration of the seventh century of the city's foundation took place immediately after the congress was over, the stay I was enabled to make made me familiar both with the present conditions and past history of this most interesting town. I wish I could reproduce with anything like worthy picturesqueness the events of the week from the 9th to the 17th of August. Many things took place which would have surprised Englishmen visiting the Continent for the first time, and accustomed to the more formal stateliness of the conduct of similar gatherings on our own shores. Indeed the first meeting connected with the congress was in itself somewhat startling, and I fancy that some of those present from England must, as Canon Heywood says so many English travellers do, have left their Sunday habits in the left luggage office at Dover, as the meeting which they attended was held on Sunday evening in the garden of a well-known restaurant, the Casino, under the shadow of trees, on the edge of the precipice which overlooks the Aar, and gives a beautiful view of the winding stream rushing to the great bend it makes round the extreme point of the peninsula on which the town is built. There we assembled Men and women of nearly all European countries—Italians and Russians, Germans and Dutchmen, Portuguese and Spaniards, Belgians and Frenchmen, Englishmen and Americans—mingled in pleasant conversation, and seeming to enjoy their beer and tobacco, while discussing the prospects of the coming week of geographical debate. We only had one speech, but that was well delivered and to the point. Colonel Müller, the Mayor of Berne, welcomed the members of the congress in a few well-chosen hearty words. He disclaimed the right to speak as a scientific man, and gracefully referred to the approaching celebration of the seven hundredth anniversary of the city's foundation, stating that the Duke of Zähringen, who founded the town in 1191, was a geographer after a kind, who at a time when men pursued the bear in the woods which covered the spot where the city now stands, with the quick eye of a true explorer, chose the place where a city called to great destinies could fitly be placed. It was very pleasant to meet so many friends interested in geographical studies, and I was personally much gratified to see that everyone who was really actively engaged in geographical work, whether he came from Spain or Russia, or any intermediate country, was quite familiar, either by previous meeting or by correspondence, with the secretary of the Manchester Geographical Society, who was often called upon to act as a master of the ceremonies, and to introduce distinguished representatives of foreign societies to one another.

The formal proceedings of the congress were begun on Monday, the 10th August in the Museum Buildings, under the presidency of Dr. Gobat, of Berne, who immediately called on M. Numa Droz, the Foreign Minister of the Swiss Republic, to give the address of welcome, which he did with a graceful eloquence, which characterised all his utterances during the congress, and which made one of the compliments paid to him by a representative of the Royal Geographical Society of London very appropriate when he said that, like his great Roman namesake, he seemed to have been inspired by some unseen Egeria. Our more practical work then began, first with a somewhat sad incident, as Dr. Gobat asked us to join in a resolution of sympathy with the friends of Paul Crampel and with the representatives of French geography in the loss our science had sustained by his untimely death. In a few graceful words, M. Dupuy, the representative of the French Ministry of Public Instruction, responded, and we proceeded to elect presidents for the various sittings of the congress—selected so as to secure that every nation represented should at some time or other see one of its countryman in the chair. A jury was also appointed to select prize winners in the Geographical Exhibition, of which I shall have to say something later on.

You will not expect me to give you a summary of all the papers read during the congress, nor would you thank me if I did, as I can hardly think of anything more tedious than such a summary would be, especially as, according to my own opinion, very many of the papers ought not to have been read at such a gathering as an international congresss. They were simply papers which would have been suitable for one of our library meetings, but altogether unfitted for a great gathering at which the leading men of our branch of science had assembled from all parts of Europe, and also from various American and Australian states. I trust that if, as is likely, the next congress is held in London, a committee will carefully examine the papers offered to the congress, and only permit such as are of really universal interest to be read. I hardly think it worth the while of an international congress to discuss the origin of the Caribbean tribes, or once again to refute the pretended claim of Captain William Glazier to have discovered the true source of the river Mississippi, or to determine which hill in a rather insignificant Russian range is to be considered the highest. I might mention others, but these will suffice to show the character of papers which it seems to me it is hardly needful to convoke men from all parts of the world to hear and to discuss. Of greater value no doubt were papers such as that so carefully prepared by Dr. Robert Cust on the missionary work of Europe and the United States in Africa, of which I need say nothing, as it has been laid before a meeting of this society, which I was unfortunately not able to attend, and no doubt carefully discussed. Even more important and more specially valuable was Dr. Albert Penck's (Vienna) contribution, in which he urged the preparation of a map of the earth on the scale of one to a million. He pointed out that the age of great discoveries was past; we could not add another continent. But what we have to do is to fill up the grand outlines sketched by explorers. We have now the materials at our disposal for the creation of a large map of the world on a uniform scale, giving a faithful representation of the earth in all its relations, and reproducing the sum of our geographical knowledge. Many states have already produced special maps of their countries on the scale of a millionth. What is needed is the joint action of these and other states in producing the complete map. Professor Penck did not deny the difficulties which exist to hinder the proposal. The congress has no financial resources for so great a task, but several private firms had produced maps on this scale. It was pleasant in this connection to hear the map of East Central Africa of Mr. Ravenstein, which he had issued with the aid of the Royal Geographical Society, spoken of with special praise. A sub-committee was appointed to consider this proposal and to report to a later session of the congress. It may be as well to conclude my account of Dr. Penck's paper by giving the final result of the congress's deliberations upon it. It was agreed that the congress should take the initiative in preparing a large map of the world on the scale proposed, and that the sections of the map should, whenever possible, be defined by meridians and parallels. For this purpose it appointed a committee representing various nationalities, who were to try and induce the various states to help in the realisation of the plan. The committee is also to induce publishing societies and firms to prepare sheets of the proposed map. The sale of these sheets should be arranged so as to be most easy for the public. For England General Walker, General Wilson, Mr. Ravenstein, and Mr. Scott Keltie were appointed. Should the plan be carried out it will indeed be an interesting map. It would cover a globe similar to the one which was exhibited a few years ago in Paris, and being on the same scale would, of course, give a truer picture of the globe than we have as yet ever seen. There will, however, be great difficulty in securing the accomplishment of the plan. Our Government, which seems unable to satisfy the country with a map of Great Britain and Ireland, can hardly be expected to fall in with this wider scheme. Such a map, further, would necessarily demand that it should be executed on the very best plan, which would involve great expense, so that it could not be produced cheaply or expect a wide circulation. Whether sufficient public spirit will be shown to provide the needful funds seems a doubtful point. We have further to arrange as a preliminary that all countries should agree on a prime meridian, and further, the difficulty would arise as to the orthography to be adopted in writing the names of places. The question of a prime meridian was discussed at the congress, and that with some warmth. Notwithstanding the decision of the conferences at Rome and Washington, some wished to see another meridian adopted than that of Greenwich, one passing through the Canary Islands and another through Berne being proposed, while Mr. Bouthillier de Beaumont made the altogether novel suggestion that we should adopt a meridian which should pass through the Behring's Strait, which would have the peculiar advantage of passing through no one's land, and would very closely divide sea and land in equal quantities for each hemisphere, and be a really mediatorial meridian. I am glad to say, however, that common sense prevailed, and that nothing was done by the congress to upset the agreement at present come to by most nations to accept Greenwich as the prime meridian. Indeed a resolution was finally adopted urging the Swiss Government to associate itself with the Italian, which had already taken the initiative in securing decisive action on the part of all nations to regulate this question, which for telegraphic and railway purposes is most important. Whether anything will be done I confess I am very doubtful, as there are international jealousies which militate against any ready acceptance of an agreement, notwithstanding its very obvious utility. The subject of orthography was also discussed. The difficulty of the transliteration of foreign—especially of Eastern—names was dwelt upon, scientific men differing from each other as to the correct way of reproducing the foreign sounds in our western writing. It was finally recommended, though as it seemed to me without any real understanding of the question involved, that, in all countries using Latin letters, they should be adopted for maps and geographical writings. For the nations which have not this system, the system proposed by the Geographical Society of Paris should be adopted. When this resolution was proposed and carried, I asked several gentlemen, some of whom had taken part in the discussion, to explain to me the system of the Paris Geographical Society. I found them just as ignorant about it as I am myself, and cannot therefore say definitely to what we are committed by the vote. But this is of less importance, as a mere vote of the Berne Congress will, I expect, not carry much weight with anyone who knows how the votes were taken. In the various sections discussions arose on different subjects, and those present drafted and carried after debate what they deemed right. All these resolutions were sent up to the general committee, and by it placed in the president's hands. At the last session of the congress he, with remarkable speed, read over the resolutions, some of which were rather complicated in their construction, and before adoption by any practical man would have required careful consideration ; but no time was given for consideration, and if no one protested—and no one did—the president declared the resolution carried, although it was neither moved nor seconded, nor any vote taken upon it. So rapidly was this process pursued that one resolution, which referred to the prime meridian, and which would have upset all that has been done with regard to Greenwich, was adopted, and would have appeared in the list of congress resolutions had not Professor Penck, after the whole string had been gone through, risen and moved that this one should not be published. To us English folk the whole procedure was quite a surprise, and all agreed that when we welcome the congress in England we will use the opportunity to show our friends how business really ought to be done.

We had a very valuable morning, devoted to the consideration of the state of geographical teaching in Germany, America, England, Belgium, France, and Switzerland. M. Faure, of Geneva, introduced the subject in a very long paper, beginning with the days of Rousseau and Pestalozzi, and tracing the great advances that have been made in methods of teaching, concluding his address by moving a resolution, subsequently approved by the congress, in favour of the establishment of special chairs for the teaching of geography at all universities. We were favoured by addresses from Professor Palacky, of Prague, who recommended the further establishment of special seminaries for the study of geography in connection with the universities; from M. Dupuy, who described the methods adopted in France for the elementary schools up to the university, with that clearness and precision which makes French scientific papers so delightful. It was pleasant also to hear Mr. Scott Keltie show how, since the report of the Royal Geographical Society had been published, advances had been made in the systematic study of our science in our own country. I fear I should weary you were I to try and tell of many of the papers which were read by the explorers who attended the congress. I was most struck by the very rich and condensed account which Count Pfeil gave us of the Bismarck Archipelago; by the description of the hardships through which Prince Henry of Orleans had passed while visiting Thibet in 1889-90 with Colonel Bonvalot; and by the account of Count Szecheny's explorations in the same country, which was given by Professor de Lóczy, of Buda-Pesth. The subject of emigration and the aid which can be given to emigrants was introduced in a most interesting paper of General Annenkoff, the celebrated Russian engineer, while the protection which Government should afford to emigrants was brought forward by Prince Cassano. There can be no doubt that many leave their homes in Europe in perfect ignorance as to their fitness to earn their living in the new countries to which they go, and that our geographical societies ought to be prepared to assist, with their stores of knowledge, all who wish to procure information. Unfortunately we know in England that warnings are too often given in vain, and the tempting descriptions of the agents are listened to instead of the impartial counsel of the Government and of societies like our own. I have far from exhausted the subjects brought under the notice of the congress, but, unfortunately, what with sections and sub-sections, and with general meetings, it was impossible to hear everything that was read or to report upon everything that took place, and I find I have hardly any time to describe even most generally the valuable exhibition which the friends at Berne had provided to illustrate the history of geographical studies and its present position. Germany, France, Belgium, Italy, Finland, Sweden, and Switzerland were most amply represented by maps, books, and apparatus sent by the Governments and leading publishers. English work was not exhibited, no notice having been taken by our authorities or by our map makers or educational publishers of the invitation of the congress. All that I could see of England was a disreputable collection of unbound numbers of the Royal Geographical Society's Proceedings, and a volume illustrating early explorations of Swiss mountains. I believe Mr. Sowerbutts has very full notes of the exhibits, and am sure that he can give us some evening a very interesting detailed criticism of the exhibition. I must content myself with saying that the Swiss department was to me of the highest interest. It was not only instructive as to Swiss geographical studies, but it was of very general value to see the development of cartographical methods shown by the very perfect collection of maps of Switzerland and parts of Switzerland, beginning with a reproduction of the "Tabula Peutingeriana," dating from 193 to 211, and containing everything that could be collected up to the grand map of General Dufour, completed in 1863. The steady progress shown, the variety of methods adopted, the quaint simplicity and humour which characterised some of them, the gradually-growing beauty and accuracy of the later maps, made the 440 numbers which formed this collection a most valuable and instructive exhibition. Not the least important part of the exhibition consisted of the various relief maps of different parts of Switzerland, reproducing every detail of the country represented in the most graphic manner. It was not easy to tear oneself away from the examination of these beautiful reproductions of natural scenery, recalling, as many of them did, very pleasant hours of bygone travel and enjoyment. You must, however, not think that your representatives spent all their time in the various sections of the Congress, or in the halls of the Exhibition. I ought to say in passing that the Exhibition occupied the new Federal Palace, granted to the congress by the Federal Government, while some of the meetings of sub-sections were held in the old Federal Palace, granted by the same authority. This is something like the English Government offering the Houses of Parliament for the use of the next International Geographical Congress, an offer the likelihood of which being made you will, of course, see. The spirit which on the first Sunday evening brought us together in the Casino Gardens had secured for the members of the Congress the use of the theatre on the Schäuzli, where a comic operetta was performed for their benefit on the Monday evening, everyone being admitted free on presentation of his membership card.

During the intervals special poems, welcoming the congress to Berne, were recited in German and in French, showing how thoughtfully our hosts had done all that lay in their power to give their guests pleasure. A still greater pleasure was provided for us on Tuesday afternoon, when a special train took us to Thun, where two steamers were placed at our disposal for a sail round the lake. Unfortunately the sunshine, which had made the morning perfect, did not last till afternoon, so that the distant views, which make the lake of Thun so much more than lovely, were hidden, but the nearer views were perfect, and their picturesque beauty made the excursion one of great interest. A little speech-making in one of the public gardens on our return brightened our proceedings, as it enabled the citizens of Thun to welcome their guests, and gave the latter an opportunity of acknowledging the hospitality they had received. I need hardly add that the entire proceedings closed with a public dinner, presided over by Dr. Gobat, when the friendships formed during the preceding days were pleasantly continued. It was a true reproduction on a small scale of the separation of the nations, as before parting we all seemed wishful to show what varied languages could be spoken. Speeches were made in French, German, Italian, Spanish, and English; and a quick ear could catch conversations carried on in Russian and Magyar. But amid this medley of tongues there was the most cordial unity of friendly feeling, and an evident shrinking from the inevitable parting which was to come. We talked of the past, and spoke hopefully of future pleasant gatherings, when we should once again meet to discuss our common object of study. The English delegates present were not officially authorised to invite the congress to hold its next meeting in London, but the Fellows of the Royal Geographical Society present in Berne spoke as if they were sure that the official invitation would be sent after the first meeting of the Council had been held, and under those circumstances I ventured in your name to say that if any of the members should come as far north as Manchester, we would show them that Manchester, though it had no snowy mountains and wild glaciers to display, had hearts as warm and homes as hospitable to give strangers a welcome as any that could be found even in the generous city to which, with such sincere regret, we were now obliged to bid farewell.

The report of the delegates to the Yorkshire Mechanics' Institute Union, at Pudsey, Tuesday, June 16th, 1891.

At this meeting the Marquis of Ripon, the president of the Union, took the chair.

The reports of the Council were taken in the afternoon, and the question of Technical Instruction occupied the attention of the delegates. In the evening a meeting was held, and an excursion in wagons, with a visit to Mr. Priestly's house and Roundhay Park, took up the day.

Besides the keen discussion on Technical Education, the County Grants, Evening Continuation Schools and Craft Teaching, which was of a most profitable and interesting nature, there was not this year anything of especial interest from a geographical point of view.

An arrangement for the Union to take the examination for the Society for Secondary Schools on the subject of India was proposed, and has been subsequently accepted. If the same arrangement can be made for Lancashire and Cheshire, it will simplify the working of this Society in the matter of prizes for geographical teaching. The arrangement that Yorkshire would be the subject for the prizes for primary schools in the year 1893 was well received by the delegates.

Lake Chala, Mount Kilima-njaro.—Mr. Keith Anstruther, who has been for some months a resident at Taveta, in a letter addressed to us from that place, informs us that he has made it a special object to explore this deeply-seated crater lake, disbelieving the universal belief of the natives regarding its inaccessibility. In December last he made his first attempt. He says that the lake is close to the western side of the stream called the Lumi on our maps, the correct native name of which is Mfuro, or, in the Masai language, Naromosha. The plains to the east and west of the stream gradually slope down to the neighbourhood of the crater, so much so that on the eastern side there is a steep ascent from the plain to the rim of the funnel, while on the western side the elevation of the rim is only a little above the plain. At the south-western end the crater rises to a peak 200 or 300 feet high; and at the north-western a dry watercourse with wooded banks descends to the crater; it was this latter point that he chose for his descent to the lake on the 19th December. His aneroid gave for the level of the water an altitude 195 feet lower than his camp near the crater rim, or 477 feet above Taveta. A few months afterwards he managed to convey a portion of the sections of a pontoon down the declivity, and, lashing them together, circumnavigated the lake several times, finding the circumference to be at least six miles. On the first of his trips, in April last, he conveyed Mrs. French-Sheldon on her tour of circumnavigation of the lake. In summing up the peculiarities of the lake, Mr. Anstruther says the temperature of the surface-water is only 1½° lower than the atmosphere, and that there is no sandy beach, the rocks on the slope being of volcanic formation, without incrustation of any kind, and that the water-marks show that there have been considerable alterations of level. As there are no gorges on the sides of the funnel, the sudden gusts of wind that pass over the surface were very puzzling to account for; a commotion of water which suddenly appears "from the centre of the lake and as suddenly disappears," and strange currents drawing the raft towards the centre, were also very curious.—*Proceedings Royal Geographical Society, October*, 1891.

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A PEEP AT THE LAND OF THE RISING SUN.

By Mr. WILFRED M. STEINTHAL.

[Addressed to the Members, at the Chamber of Commerce, Wednesday, December 16th, 1891.]

WHEN I undertook to give a paper before this society I told your able secretary that I could not give a scientific paper on Japan, and he encouraged me by telling me that what you wanted was merely an account of some impressions made upon me by a new country and its life—a life altogether under a new aspect for me. I thought that sounded feasible, and consented to address you. In the short time I was in Japan—about six weeks altogether—I saw a great many new and interesting things that gave me great pleasure, and left behind many pictures to be called up for my own edification in future years; but, owing to circumstances over which I had no control, I was unable to take more than quite a superficial view of the country and its people.

Before—long before—I reached the promised land of Japan I heard many stories of that country—how the inhabitants thereof were so polite, how much they laughed, and how little they laughed at, so that I was prepared on landing at Nagasaki to be greeted with a roar of laughter. At last, after many weary delays, we actually reached the long-wished for haven. Nagasaki is a beautiful place, with a splendid land-locked harbour. The town spreads itself out all round the bay, and the trees grow right down to the water's edge. The day was lovely, and the picture was perfect. All of us on board were anxious to get on shore and see if the people of this beautiful land were equal to what we had heard. So a very short time elapsed before we loaded the little launch that was to take us off and made for the shore.

As soon as we came within reasonable distance a swarm of ricksha coolies began bowing to us and pointing to their rickshas, and as soon as we landed we were pounced upon and put into rickshas whether we wanted it or not. After many bumps, shakes, and escapes, we found ourselves clear of the crowd, with time to look about us. For a moment or two I felt disappointed. No one seemed particularly amused at anything. Our coolies looked dirty and unshaven, and very like what you would expect loafers round the docks to look like. This feeling soon wore off, however, in the excitement of looking at the strange costumes around. One's first impression was that the number of armless men in Japan was very large; but it soon became clear that this was only a mistake due to the fact that the men drew their arms out of their loose sleeves into their blouses, called Kimonos, when they were not using them.

You have all, no doubt, seen a Japanese doll, and know how quaint it looks. But there, running along the road, was one of these self-same dolls in a most Japanese attitude. I give up all hope of trying to describe the sight. I must leave it to your imagination, only telling you to get a Japanese doll and make it waddle properly, hold its arms straight out, and let it be always just on the point of falling; but remember that, if it does fall, it will not burst out laughing as the Japanese baby itself would, and so remind you of Gilbert's lines—

> Life's a joke that's just begun,
> Everythiug is a source of fun.

One does not know what is the funniest thing about these babies—their dress, their attitudes, faces, or heads. I ought to say one word about their heads. The Japanese mothers shave their children's heads in various ways, no two alike. When you think of the number of hairs on a child's head, you can imagine that by careful consideration the Japanese mother has great scope for various combinations of shaving different hairs away. One mother will shave the head leaving a patch in the middle, another leaving a patch of hair at each side of the head, and so on *ad infinitum.*

The great objection to Japanese babies partly comes from this habit of shaving the head, for it is a very prevalent—I might almost say constant—source of eczema. Another objection is clearly expressed by calling to mind another quotation from Gilbert's *Mikado*, where he makes one of his characters say, "The Japanese don't use pocket-handkerchiefs;" and again, in that charming book, "A Social Departure," where the authoress suggests a mission being started for the express purpose of remedying this defect amongst Japanese children.

One marked peculiarity about the Japanese hair I should mention, namely, that in no case can I remember seeing any other colour than black. Nor is it common to see anything but the most scraggy kind of moustache or beard upon a man's face.

But I must return to Nagasaki, I am afraid, only to wander off again about the Japanese, for I found them so much more intensely interesting than the scenery, although that was beautiful enough. We went from the quay along the streets to a temple. Now, a Japanese temple is not always the most interesting thing in the world, but you have to see it or you have not seen Japan. You go out for a stroll from your hotel or tea-house, and the first thing you are sent to see is a temple. Your guide insists upon it; the hotel proprietor feels hurt if you don't; and all the other visitors at the hotel feel they have been defrauded if you are not caught in the same way they have been. They are all alike. About half a mile away from the shrine itself you come across the typical wooden archways that seem to mean nothing in particular, but which, after a short acquaintance with Japan, become fraught with as much meaning as it is possible to pack (under pressure of several atmospheres) into them. You pass on from these fateful arches to the foot of a long staircase. These staircases are straight ahead; they invite you to walk up, if you hesitate, they demand the sacrifice; if you hesitate still longer, your guide begins to look sad, and, in fear of hurting his feelings, you dash at the awful ascent. But the staircase is wroth, it rises up in its wroth, and instead of having a comfortable, easy climb, you have a precipice to scale. However, you do scale it in the end, and expect to be rewarded with many magnificent carvings, but instead you have a sort of outhouse to look at. It is a Shinto temple, and, of course, it contains no placid Buddha to look down upon you. You wake up, after clearing your eyes and getting your breath, to the fact that this outhouse has a great beam hanging loose above the door, one end sticking out, the other disappearing within. You, perhaps, are seized with curiosity to know what the rope hanging at the end of this beam is for, and gently take hold of it, and upon your astonished ear falls an unearthly boom. You have rung up the gods, so you turn and fly, nor rest until safe in your ricksha speeding away. Then you talk the matter over with your friends, and solemnly vow that never again will you enter a temple; but you will, at least until you realise that a little sadness on your guide's face is much more easily borne than aching limbs and great physical discomfort from hot weather. But this is, again, by the way. I climbed the stairs at Nagasaki like a man—we all did—and thought it very interesting. We were young and foolish then.

If any of you purpose going to Japan, be advised by me climb the Nagasaki temple; go to the temples again at Tokio and at Nikko, but harden your hearts against all others. No; one other I must except, that is, at Lake Biwa, where the lovely view well repays you for your exertion.

Nagasaki is one of the treaty ports of Japan, of which there are several others—Kobè and Yokohama being two—and just about these ports you are free to come and go without passports. But of these more anon.

We wandered about the town and enjoyed the novel sights till it was time to return on board for the passage to Kobè. This passage is one of the most lovely than can be seen. You go through the famous inland sea, so-called from its lying shut in on the one side by the main island, and on the other by numerous small islands. Often as you sail along you can see no possible passage till a sudden turn brings another apparently land-locked reach in sight. The scenery is beautiful, and in many places curious looking, as if the mountains were made of sand.

We passed on to Kobè in one day and landed again, this time in rainy weather. Nothing daunted, however, we went off to a waterfall, at the best point of view of which we found a tea-house. This is a perfectly Japanese characteristic. They really appreciate good scenery and beautiful things, as witness the artistic curios we see in England, and they all of them make a point of going to see these beautiful spots and pic-nicing at a tea-house to look at them. Speaking of scenery reminds me of a very marked feature of a Japanese landscape that cannot help striking one—that is, that nearly every hill has on it one tree either by itself or else standing out well from the others.

At Kobè we went to the Hiogo race meeting. One boy who was riding was dressed rather in the style of a Red Indian chief. He was tied on to his horse, which was held at the starting-post, and when the flag dropped he began to flog his horse round the course (which was about two furlongs in length), and by that means got ahead. At various corners of the course the friends of this jockey rushed out and frightened the horse on, and if another horse looked like passing him, the jockey of the first horse hit it over the nose and drove it back.

After one or two races a man in gorgeous red costume came forward with two great pieces of wood, which he banged together and then made a speech, which, being interpreted, meant that the rain was too bad to allow the races to go on, so that pass-out tickets would be given to those people wishing to come again the next day. So the crowd went, and we went also and spent the rest of the day shopping. We had been told many and many a time that we ought not to begin buying in Japan till we had learnt something about the curios, and many a time we had resolved not to buy anything till we had been in the country for about a month. In Kobè, the second day of our being in Japan, we tasted the sweets of shopping. We bought rubbish—that stands to reason—but we were infected by that subtle disease which attacks all globe trotters on reaching Japan, I mean the curio fever. I had a slight, a very slight, attack of the same fever in Ceylon, but it was transient, and my temperature did not rise high. But an evil spirit prompted us to try a little, only just a little, shopping in Kobè, and, though we were not then and there seized with the fever, we contracted the germs of the disease, which lay dormant for a few days more until we reached Yokohama, when, the incubation period being over, the fever set in properly and never left us till we left the country. If you have not been in Japan you do not know what it is to shop. In Japan your whole existence turns upon that one thing. You get up early in the morning to be ahead of everyone else, and in the intervals between shopping you eat and sight-see, and compare notes as to bargains with other people.

A Japanese shop is not a shop with front showing all the best things. It is a rubbish heap with a presiding genius, often as not a boy, who on your approach stands up, bends low before you, rubbing his knees with his hands, and sucking his breath in between his teeth. You bow in return and begin to handle his goods, while he sits down again in apparent unconcern. You pick up some trifle and say "Ikura," which means how much. Bowing and sucking in his breath he states a price, which you scoff at and offer your price. You do not want the thing at all, but the probability is you will buy it to start further purchases, for if he once gets a glimpse of your money and thinks you mean to use it, he will begin to produce things that are worth looking at. You gradually get an idea that one thing he shows you is *the* one thing necessary to complete your happiness in life. You did not know what an aching void there was in your existence till you saw that one thing, but you suddenly become conscious of the fact that life without that particular pipe or dagger or vase would simply not be worth living. Accordingly you look at the things again, picking up your treasure and throwing it down as hardly worth looking at, *but* you ask the price. He says $15. You in your own heart of hearts would be ready to give $20, but you don't say so. You SAY that it is far too much—you will give him $3. He sighs, draws in his breath, and says it would ruin him to sell it at less than $14. Back and forward this goes on, you perhaps reaching the high figure of $6. There you stop and leave the article alone, as if you didn't want it at all; but you stay in the shop looking at other things, and a strange thing happens—that knife is always coming into your hand again, whether you pick it up or whether it is put into your hand by some one else you don't know. At last you make up your mind to go and leave it for to-day, unless, oh, horror! some one else might come in and secure it. This gives you such a fright that you raise your offer recklessly about 25 sen., *i.e.*, about 9½d., and turn and walk out of the shop. You walk away feeling very sad, and not sure that you had better not go and give one more offer, when some one touches your arm. It is the shopman, who has relented so far as to offer the article for very nearly your figure; but now you know you are safe, so you stand firm, and in another minute the man heaves a deep sigh, draws in his breath, and says all right. Nearly wild with delight at having secured it, your conscience suddenly stabs you. Are you defrauding the humble child of Japan? Can you rob him of his hard-earned gains? You reflect this way till the parcel is wrapped up and handed to you with the assurance that it is very cheap, very cheap indeed. Then that being over, and the money paid, your broken-hearted friend suddenly revives, and amidst many smiles tempts you to defraud him further. Evidently he likes it, and then, alas! it becomes borne in upon you that perhaps you might have got the prize much cheaper, and you grudge him those extra 25 sen. he got from you in your fright.

But, although I have now told you to what an extent the curio craze carries one away, I have not mentioned what these curios are. You must all have seen shops filled with beautiful Japanese curios in England. I have seen several, and been into several, and had a look at the things on view there. Now, when I tell you that on almost every occasion I have come away slightly disappointed at the style of things to be seen, you will begin to appreciate how beautiful the things are that one sees in Japan. The great thing that strikes one is the want of finish in the goods shown here in comparison to the things seen there. A Japanese curio is nothing unless complete in every detail. Take, for instance, Satsuma ware. I have brought down with me one or two specimens that will show a little what I mean. (Satsuma specimens, several grades.) Satsuma ware is one of the most beautiful and artistic wares of Japan. The history of its production and its progress would occupy more time than I have at my disposal, even if I were capable of describing it. I may admire Satsuma from a distance; I may even be able to point out marked differences between really good Satsuma and not good imitation Satsuma, but I could go no further. I may, however, venture to say this, that if you see on sale any piece of pottery labelled really good old Satsuma, you may be perfectly sure that it is not so. Really good old Satsuma is as rare as the Mulready envelope, or even rarer, and the pieces are nearly, if not quite, all known. There is a new Satsuma that is good and not as rare as the old, but be not deceived, I say, into believing that you see real old Satsuma save in well-known collections of Japanese pottery. But Satsuma ware is not the only kind of curio you see in Japan, and if ever you go to that country you will find to your cost that there is lacquer work. You will have a Satsuma craze, a lacquer craze, a craze for Cloissonné, for bronzes, for swords, spears, knives, netsukés, ivory carvings of all kinds, and hosts of other things. I do not say in what order you will get these crazes, but get them you will. Lacquer work you need an education in to understand, so I am told. Unfortunately I only got a *very* slight smattering of that education, but I had a lacquer craze. To show a really fine piece to a new comer, or to send home one as a gift to one of the uncultivated natives of Europe or America is, as the Japanese proverb says, "like giving guineas to a cat."

That proverb suggests my mentioning how few pet animals are seen in Japan. There are cats and dogs about, but ill-cared for, and not in any great numbers. The Japs now and then do go in for pets. In 1873 they had a craze for keeping rabbits. Now there are no rabbits indigenous to Japan, hence, when imported for the satisfaction of the rabbit craze, they fetched incredible prices. As much as $1,000 was paid for a single specimen. Speculations in $400 or $500 rabbits were of daily occurrence. In 1874 the Government put a tax on rabbits, and ruin fell upon the luckless rabbit fanciers; and another craze started only to be dropped again in a short time, and another substituted. This curious rage for one thing and then another is only another instance of the extraordinary flightiness of the Japanese mind, which has recently been so startlingly brought to mind by the articles on the recent earthquake in the *Times.*

It is a generally accepted superstition in Japan that earthquakes are due to a large subterranean fish which wriggles about whenever it wakes up. Whether this is true or not you can perhaps decide. The frequency of earthquakes in Japan has given scientific men in that country much opportunity of studying them, and if anyone is interested in the subject they could not do better than read some of the works by investigators in that country. I might perhaps mention "The Transactions of the Seismological Society of Japan," of which there are about fourteen or fifteen volumes, or "Earthquakes," by Professor Milne, in the International Scientific Series.

Volcanoes are also, as a natural thing, quite common in Japan. One, namely, Fujiyama, is familiar in its appearance over the whole civilised world as the one conical snow-capped peak that appears on all the screens, fans, pictures, &c., that come from the "Land of the Rising Sun." The mountain is considered holy, and that every one who climbs to the summit adds a year to his life for each ascent is a well-known thing that needs no proof. I shall never forget how grand it looked when coming through a fir copse over the crest of a hill, near a little village in the heart of the country, called Shimonosurwara, I saw it standing towering over everything else—silent, cold, and immovable—looking down upon the country for miles around. No wonder that it is looked upon as sacred.

This last earthquake, of which we have only just heard the full details, is the first really large and destructive one that has occurred since 1855, though there was a pretty sharp shock in 1880. In 1855 Tokio was apparently the seat of most damage, and in looking up an account of that earthquake I was much struck to find how closely the events have been repeated in the last one. I found the same story of a number of shocks lasting for many days, people killed in thousands, fires breaking out in many places at once from the overturning of fire-boxes, &c. An interesting point about Japanese earthquakes is mentioned by Rein, and that is, that, in contra-distinction to what we are told of South America, there is no anxious presentiment of the coming danger. I passed through the district where this last earthquake occurred, and I suppose I was about a week or ten days moving from place to place therein. The towns that have been destroyed are some of them familiar to me. Most of them are, however, merely names. One of them, Osaka, is the great manufacturing town of Japan. There stands the Mint and the Naval Arsenal. It is a garrison town also, so the destruction of life and property therein must have been very great.

Osaka, on account of its numerous canals and bridges, has sometimes been called the Japanese Venice; but I am afraid the comparison is not particularly happy. I have already mentioned Hiogo or Kobé, which lies about twenty miles off. The names of this town are confusing, but quite explicable when it is understood that the European part is called Kobé and the native quarter Hiogo. Kioto, I believe, also suffered to a less extent in this earthquake. Kioto, the old southern capital of Japan, lies a little to the south-west of Lake Biwa. It is one of the most picturesque towns to look at, especially from the upper end, where the hotel for foreigners is placed. I had the good fortune to be there at the time of the Cherry Blossom Festival, so had the advantage of seeing the town illuminated at night, though it had a corresponding disadvantage of being very noisy, much singing and samisen playing being indulged in. Kioto is very regularly built, and in the arrangement of its streets resembles an American town. The names of the most important streets running east and west have reference to the order in which they succeed each other, reckoning from the north. They are (of course in Japanese) Ichi jô, Ni jô, San jô, that is, first, second, and third streets. These streets run down to a river, the Kamo-gawa; and on San jô crossing it, the famous bridge, the Sanjô-bashi, is to be found. It is a very broad, fine bridge, with bronze nobs at intervals on the railing, is 200ft. long, and was built 300 years ago by Hideyoshi. The Kamo-gawa itself, when I saw it, was not what would be called a large river; in fact, I doubt if it could be called more than a brook, but in bad rainy weather it becomes a very fine rushing stream. This is often the case with the Japanese rivers, on account of their sharp descent and short course.

At Kioto I went to the theatre, and was greatly amused. The theatre I went to had only actresses—women only being allowed on the stage. At another theatre, however, in the same town only men are allowed on the stage. The building itself was, of course, of wood. The stage occupied one end, with a long platform running down to the opposite end of the theatre close to the entrance, but there running into a cellar. The actors came on, either along this platform or from the wings, as in a theatre at home, or as part of a set piece which came on on a movable circular part of the stage, which at the same time took off the end part of the previous scene. The theatre was lit by oil lamps, although the fittings were there for electric lighting. The people do not sit on chairs or forms to watch the performance. They squat in family groups about the floor, in little sort of boxes partitioned off from each other. Each man has his heigar or fire-box with him and his pipe, which is smoked incessantly. The performers speak in a high falsetto voice. When a hurried exit is made from the stage, wooden clappers are sounded with great effect. The music—if music it can be called—is weird, and to European ears distinctly inharmonious. The scenery is of a very elementary kind, and not of a sort to excite much admiration. After the play was over a grand ballet was produced. The stage was lit up with footlights standing a good yard above the floor. These footlights were candles, and all through the ballet a man was employed going round with snuffers to keep them in order.

On another occasion I went in Kioto to see the wrestlers. These wrestlers are almost a class to themselves. They are large and fat, and spend their time at this favourite pastime. They do not try to throw one another over, but merely to push or throw each other outside a ring marked on the ground in the arena. The arena itself is raised a foot or two from the ground, and is covered by a canopy supported by four poles, one at each corner of the raised square. The wrestlers are called up two and two, one from each of two opposing parties, and the performance begins. The umpire, who, by-the-bye, is the only man nowadays allowed to wear a sword in civil life, steps forward and announces the names of the competitors. These two, who are dressed as scantily as possible, busy themselves with wiping their hands and blowing water out of their mouths over themselves. They then stretch themselves, thump their knees, and come into the middle, attitudinise at one another, and then bend down to begin. They remain bent down for some time looking at one another, and then get up and walk away, to go through the same performance five or six times. Then they suddenly close with one another, and fight it out. If they are equally matched for a few minutes the umpire stops them, and announces that it is a draw; and if one is thrown out, he announces the name of the winner. This performance goes on for days together, but, as you can easily imagine, an hour and a half of it quite satisfied me. I also went to a dancing theatre, where nothing but a ballet was performed to an accompaniment of music and singing. The dancing was, of course, Oriental—that is to say, posturing—and in the gorgeous dresses that these geishas or dancing girls wore, it looked very well indeed.

At this theatre we partook of tea, made at a most elaborate tea ceremony. These tea ceremonies deserve notice for one reason, if for none other, and that is, the influence they have had on the art of Japan. That may sound strange, but nevertheless it is true. The ceremonies have been in existence 600 or 700 years, and have passed through three stages, namely, a medico-religious, a luxurious, and, lastly, an æsthetic stage. They originated in tea-drinking pure and simple by certain Buddhist priests of the Zeu sect, who found the infusion useful in keeping them awake during their midnight devotions. How long Japanese tea-drinking remained in its first or religious stage is not clear, but we know that by the year 1330 the second or luxurious stage had already been reached. Chamberlain, in "Things Japanese," says: "The descriptions of the tea parties of those days remind one of the 'Arabian Nights.' The daimyōs, who daily took part in them, reclined on couches spread with tiger skins and leopard skins; the walls of the spacious apartments in which the guests assembled were hung not only with Buddhist pictures, but with damask and brocade, with gold and silver vessels, and swords in splendid sheaths. Precious perfumes were burnt, rare fishes and strange birds were served up with sweetmeats and wine, and the point of the entertainment consisted in guessing where the material for each cup of tea had been produced, for as many brands as possible were brought in to serve as a puzzle. Every right guess procured for him who made it the gift of one of the treasures that were hung round the room. But he was not allowed to carry it away himself. The rules of the tea ceremonies, as then practised, ordained that all the things, rich and rare, that were exhibited must be given by their winners to the singing or dancing girls, troupes of whom were present to help the company in their carousal. Vast fortunes were dissipated in this manner. All through the fifteenth and sixteenth centuries the tea ceremonies continued to enjoy the unabated favour of the upper classes. The gift of some part of a tea-service was the most valued mark of condescension which a superior could bestow." Now, when we hear all this, we need not be surprised to find that many of the rarest curios are connected with tea-drinking, and that the development of art was much helped on thereby.

From Kioto I visited Lake Biwa, and saw the temple which is one of the seven sights of the lake, the old bridge over the Uji-gawa, and the celebrated pine of Karasaki, of which I show a native picture. Nagoya I also stayed at. This town was apparently one of the first to suffer in the last earthquake. It is a town of 130,000 inhabitants. It is not attractive in looks, but is a large industrial centre, being one of the chief seats of several trades, namely, enamelling of copper and porcelain, and embroidery of cotton and silk goods. When I was there I heard that a cotton mill had just been started, and was apparently running with great success. This cotton mill has been seriously damaged by the earthquake, the chimney is broken off and much other damage done, and it is not expected to be in working order again for three months. The owner had been trained at an Oldham mill. There is a large castle situated in an open part of the town, the tower of which has two large silver-gilt dolphins ornamenting the top. These two dolphins are now enclosed in wire cages to prevent injury. They were sent to the Paris Exhibition, after having been got down from their lofty perches (by means of kites in the first instance). They were safely kept during the Exhibition, but on their way back they were lost at sea, in the Mediterranean I think. After a time they were fished up by divers, and arrived safely home again. It is a garrison town, and I had the pleasure of seeing some of the Jap soldiers at drill, and a very promising lot of soldiers they look, not particularly smart in their clothing, but of an even height and marching together with a good swing. They were not an imposing set of men, but they looked very capable of standing hard work. The uniforms look French in pattern, and their whole military organisation is French. It is amusing to see an ordinary private meet an officer. He cannot get over his natural politeness enough to prevent himself bowing whilst he salutes, so that the combination is a little ludicrous to European eyes.

Nagoya (pronounced *Nangoya*) formed our starting point for our trip through Japan, by the Nagasendo route to Tokio. The Nagasendo is the great northern highway through the highlands of Japan, between Tokio and Kioto. In the olden days it was much frequented by the better classes travelling between those points, but nowadays the Tokaîdo or southern road is preferred, as the journey can be done by railway. It might perhaps be interesting to know how this journey by the Nagasendo was to be done in the absence of railways. One travels by means of rickshas, which are really large perambulators dragged by men instead of pushed. Our party, which consisted of four Europeans and a guide, were all in rickshas, each drawn by two men, and three luggage rickshas also drawn by two men. We had to carry with us food and a certain amount of bedding, for we were to put up at Japanese tea-houses, no hotels being on our route. Our men took us about twenty miles a day over roads that were sometimes good, oftener indifferent, and at times really bad. They were all good-tempered, amusing fellows, as polite as they were ugly, always ready to help one another over bad parts, always laughing and talking when one would imagine they needed all their spare breath for the work in hand. We used to travel for about an hour and a half at a time, and then stop at a wayside tea-house for our coolies to rest and refresh themselves. When we came up to a tea-house all the servants used to come out bowing to the ground and welcoming us to their house with a great deal of talking that we did not understand. If it was our halting-place for the night, as soon as we got out of our rickshas we took off our boots and were shown to our rooms. This taking-off of boots is a ceremony one undergoes every time one goes into a Japanese house, to save the mats from getting soiled. These mats are all the same size, 6ft. by 3ft., and about 3in. deep. They are of closely woven rushes, and make most pleasant floors to tread upon. Being all of one size, and as every house has its rooms floored with them, rooms are measured by the number of mats they contain—that is to say, one speaks of a five or seven mat room to give its size. On the ground-floor, in the middle of the room, one of these mats is often cut through, to allow of a square being taken out and in, as a lid to a fireplace situated beneath the floor, in which live charcoal is placed. When in use a wooden framework that fits round the fireplace, and stands about 2ft. high, is often used, and a large quilt thrown over this allows many of the family to lie or squat down, well covered by the overlapping quilt without danger to the quilt itself. If this fireplace is not used, the firebox, a sort of bronze flower-pot half filled with sand or some other material with a layer of redhot charcoal, is brought in. The houses are so draughty that I do not think there is much danger of carbon monoxide poisoning. The rooms are not lofty, and are cut off from one another at will by "fusuma" partitions. These fusuma are frames or shutters of the size of the mats, covered on both sides with stout wall paper, and running between grooved beams. The space of from 2ft. to 4ft. broad, between the upper crossbeam and the ceiling, is either closed and painted or decorated in some way, or is fitted with fine and artistic wood carvings. The rooms are well-lighted by means of the movable shôji, which are shutters of a kind of trellis-work covered with transparent paper. The verandah is usually open, but can be closed in wet weather or at night by ordinary wooden shutters that run in grooves on the ledge of the platform, and are fastened by bolting the last one from within. These shutters are called "amado," or rain doors. The best rooms are always found at the back, where the verandah leads on to the little garden, if the house is fortunate enough to possess one. [It should be borne in mind that I am speaking of tea-houses.] Towards the street is generally the living room of the house and the kitchen, which, having no chimney, is generally full of smoke from the charcoal fires. There is generally one fixed wall in the best room at all events, and this forms a sort of recess. The floor of this part is of polished wood, and is raised an inch or two above the rest of the room, and frequently has placed upon it two vases with flowering branches of some favourite plant (whilst I was in the country usually cherry blossom). The wall behind it is decorated by a Kakemono which is suitable to the season of the year. The second half of the wall forms a bay, occupied by small cupboards with sliding doors, and black lacquered chests to receive the bedding which is only brought out at bedtime. It consists of futons or mattresses, tightly stuffed with cotton or silk wadding, of which there are several; the kaimaki, or night dress, which is like a well-padded kimono; and the makura, or pillow. We used only the futons, carrying with us our own night clothes, pillows, and sheets. With these sleeping arrangements is brought in the "andon," a large standing paper lantern with a wick floating in oil. The second storey is always still lower than the first, and, as a rule, stands further back, so that the roof is low in front and rises higher in the middle. The staircase is usually like a ladder, of well-polished wood. The space between the papered ceiling and the roof is usually inhabited by rats, which often visit the rooms below, and run over you as you lie sleeping, or perhaps trying to sleep. Many, however, of the houses are only one-storied. Where one of these wooden houses immediately succeeds another, as in a street, it can easily be understood how fast a fire will spread if only once started, and, as in the case of the earthquake the other day, how easily such a fire can be started by the fire-boxes and lamps. In the streets of a town or village can always be seen a long perpendicular ladder set up, near which hangs a bell. This is the fire-alarm and look-out. Here and there, too, near houses are kept buckets of water ready in case of fire. The firemen are a very old institution in the country, and are said to be very well organised.

The country we passed through was at times very fine—splendid roaring torrents rushing along in narrow valleys between fir-clad peaks. The agricultural districts were all very similar to one another: small fields beautifully cultivated, with little mud-walls one or two feet high between them. There is nothing large about them, but they are wonderfully neat. The walls I just mentioned are as carefully smoothed and as mathematically accurate in their lines as it is possible for a Jap to make them, and that is saying a great deal. Rice is the principal product, so far as I could judge, and naturally so, for it forms the staple food of the people. The villages along the route are numerous; in fact, one is at times tempted to think it is one long street of houses. Irrigation is carried on largely, nearly every possible inch of ground being cultivated. Water-wheels are to be seen everywhere, and water-power is apparently used whenever possible, chiefly, I think, in some process (which I do not understand) in the dyeing of cloths by indigo, which seems a very common occupation throughout the country. Traffic is pretty brisk along the roads, large quantities of pottery being moved about, and also raw silk for weaving. Nearly everywhere telegraph poles and wires run along the road, so that in the heart of Japan from places which not a hundred Europeans a year visit, telegrams may be sent all over the country at a very cheap rate. On the Tokaîdo, or great southern highway, the telegraph wires made their first appearance, and in order to let these modern improvements and signs of progress be seen large fine trees were being cut down, and it was only by the howl in the European press of the country that this vandalism was stopped. At times the road becomes too steep for the ricksha coolies to drag one up, and ponies are called into requisition for those who do not wish to walk. These ponies and their attendants are exceedingly curious. The ponies themselves are small and ill-kempt. They wear straw sandals instead of iron shoes, so that one's progress is often stopped whilst the pony is having new shoes put on. Their saddles are primitive. They are made of two packs of straw several inches thick, fastened together before and behind by strong bars of wood, that are or show signs of having been gaily painted; one or two ropes act as girths, but the chief mainstay of the erection is the crupper, which is generally a piece of bent bamboo covered with grass or straw which passes beneath the tail, and some ropes which run from the front of the saddle round the pony's neck. The loose rope (which by the way is usually of straw), of which there is a large quantity, is wrapped up on to the saddle to make it more comfortable with its soft knots and general lumpy arrangement. One has to put one's pillow on the top of all this, and then climb on and be led away by the attendant, who walks ahead with a rope tied round the nose of the animal. You have to invent foot-rests and be thankful for anything to hold on to, for your pony usually is ambitious and quarrelsome, and anxious to kick and bite any other animal he may happen to meet. The only comparison I can draw between this method of progression and any other I know is camel riding, which I must say for a short time is infinitely preferable; in fact quite comfortable if you get the swing of it. On the whole I prefer walking the stiffest pass to riding a Jap pony. In the one case you tire yourself perhaps and feel virtuous; in the other you are certain to tire your back if nothing else, and feel lazy, as if you had shirked your work. It was in this way I crossed one of the passes that led us over a shoulder of the volcano Asamayama, which was smoking away peacefully as we passed.

For eight days I travelled with my friends along the Nagasendo, living in houses such as I have described, and travelling along in rickshas and on foot. During those eight days we saw three other Europeans going the journey from the opposite end, otherwise we met only our friends the Japs, who, ever smiling and polite, were busy in the fields or travelling the roads on business intent. Now and then we came across parties of men, women, and children enjoying themselves flying kites. Now, to us, flying a kite seems a simple thing, but to fly them as the Japs do it is not. In the first place they are often very large, needing one or even two men to hold them as they soar in the air, sounding like Æolian harps high up, for they are made with an arrangement of strings that makes them musical. Where all these strings unite into one, and for some little distance down, the cord is covered with some sharp material. The great aim of kite-flying is to draw this part of the cord across the rope of another, and so cut it and bring it down. The Japanese hold large meetings for these competitions, and, of course, great skill is displayed in avoiding an opponent's cuts while cutting his rope. Of course the children fly much smaller kites than the men, but they are much interested in the men's kites, too.

To return to towns. Yokohama is the largest and most important European settlement in Japan. It has a population of about 110,000 natives, 1,700 Europeans and Americans, and 2,600 Chinese. It has a large and well-sheltered harbour, where lie the various merchant and naval ships. There is always at least one foreign man-of-war in the harbour for the protection of the residents, though what protection the old paddle-boat—called by the Americans their flagship—could give when it is left alone there is problematical. When I was in Yokohama this American flagship and some of the English and the German fleets were in harbour, and soon after some very fine ships of the Japanese navy came in. The English fleet left in a few days so as not to be there with the Russians, who were escorting the Czarewitch. The reason for this is that, not many years ago, a large body of Russian sailors insulted a few British tars when on shore, and the Britishers went for and demolished the Russians. Since then it has not been thought advisable to run the risk of further encounters. When I landed at Yokohama I had the joys of the Custom House examination. The officers examined everything, but were quite polite. The only thing I had any real difficulty in passing in was a Chinese pipe, that had to be examined by every official there before it was allowed to pass. One of my party had a photographic camera with him that they refused to pass till next day when the whole office was open, for we entered late at night. Next day I went to get the camera out of bond. I was directed to a window where I was told to wait. After some time I was let into the office, and made to sign a great many papers declaring I was the proper person to claim the camera, and that it was only going to stay in the country a short time. When I had done this I thought I had finished, and was about to march off in triumph when I was directed to another window. I signed more papers there, and was sent to another place. At last, after actually walking from one place to another, and waiting, &c., for three hours and a half, I was allowed to clear the camera on paying about 2s. Need I say I was sweet-tempered and happy when I got away! The Jap, in copying Western customs, has not forgotten red-tape. Yokohama is a well-paved town—that is to say, the macadam is very good—and it is lit by electric light and has telephones and all other modern improvements. The hotel I stayed at was good, and the catering excellent. Most of the time I was in this town I spent in shopping, a subject I have before mentioned. Whilst here, too, I arranged about passports, which are necessary for foreigners to carry whenever they move out of treaty ports beyond a certain distance. These passports are wonderful documents, that have to be returned to the Consulate before leaving the country. They specify the provinces you may travel in, and have to be delivered at the police-office for registration at every town you stay the night. If you have no passport you are arrested and handed over to your consul. The regulations are very stringent and are kept to fairly well, it being the desire of the Japanese Government to force by these means a settlement of the " exterritoriality " difficulty.

Exterritoriality is the exemption of the foreigners residing in a country from the action of the laws of that country. This exemption exists in Japan. So long as an Englishman is the defendant in a case he is tried in his own consular court; but, of course, when he is the prosecutor he prosecutes or sues in the court of his opponent's nationality. This right was claimed by foreigners thirty years ago as the only possible means of existing in the country, and now the Japs, or at least some of them, are anxious to have the right done away with. This question is one of great interest, but I cannot attempt to give an opinion upon a point that needs much experience of a kind I have not had. I ought to mention, before I leave Yokohama, a curious sight I witnessed in the bay. There was a long line of fishing boats, or sampans, as they are called, being rowed slowly along, and in each of them were several men banging the flat bottom with pieces of wood. On inquiry what it was all about, I found that they were fishermen driving fish before them into nets sunk in the water. Whether this is a successful method of fishing I am unable to say.

From Yokohama I went to Tokio, which has left but little impression upon my mind save that it is a perfect wilderness of houses. I drove about for four hours from one place to another in my ricksha looking for a gentleman I had a letter of introduction to. When at last I reached his house I found he had just gone to England. Imagine my disgust. But I had seen a great deal of Tokio, though I could not describe it. Fancy an entire stranger—say a Jap—being driven about London in a hansom for 4½ hours. What would he be able to tell you? Just about what I am able to tell you about Tokio. I saw the new parliamentary buildings, a palace, some barracks, a large number of temples, the embassy, and a large number of houses; but I was dazed by the size of the place, and though I looked later on at one or two things more closely, that one impression of my drive still remains, and nothing else is clear. Tokio used to be called Yeddo, but when it became the capital of all Japan, and the seat of government, its name was changed to Tokio, a change round on the name Kioto, which used to be the capital and residence of the Mikado and Shogun. To give you an idea of the size of the place, let me tell you that, according to Rein, there are about 800,000 inhabitants in about 200,000 houses, situated in about 1,117 streets, and mixed up with all this about 1,026 Buddhist temples.

From Tokio I went back to Yokohama, and soon after went off by rail to Kioto and the other places I have mentioned. After I came back I went away again to a most delightful summer resort of the residents in Japan, called Myanoshita. Here I stayed for some days, walking over one day to Hakone, on the edge of the Hakone lake, from which one gets a lovely view of Fujii, which I can show you in a photograph I have here. On my way back from Hakone I came through a sulphur and hot-mud district, where walking was risky for fear of getting through the surface into a boiling mud-bath or scalded by sulphur steam. I was interested in the walk, but also satisfied to be safely through, and where one could put down one's foot without having to prod the ground with a stick first. Round about in this country I saw large quantities of splendid white iris. The hotel was Japanese in name, under Japanese management, but I never wish to stay in a more comfortable or more beautiful place. The hot-springs around supply an endless quantity of hot-water for baths, the equal of which I have yet to meet.

From Myanoshita I went back to Yokohama, and from there I sailed for America, after an all too short stay in the country I have just been trying to give you some faint idea about. If I have in any way increased your desires to go to that country, let me tell you not to hesitate longer than you can help, for the old order changeth fast and no one can fortell what future is in store, nor how soon the land of sweetness and light may change to the land of common-place Western civilisation, and, instead of being truly the "Land of the Rising Sun," Japan may have become the "Land of the Risen Sun."

ASCENT OF MOUNT YULE, BY MR. J. P. THOMSON, F.R.S.G.S., &c., OF BRISBANE.

[Read to the Members, in the Library, November 13th, 1891.]

The party sent out at the end of 1890 to explore the Kovio Range, in the Yule District, British New Guinea, has returned to Port Moresby, after having successfully scaled Mount Yule, the top of which was reached on Christmas Day.

The expedition, the cost of which was borne by the Victorian Branch of the Royal Geographical Society of Australasia, was under the auspices of the Government of British New Guinea, His Honour Sir William MacGregor, Administrator, having personally directed its organisation and equipment, besides having accompanied the party to the St. Joseph District. Sir William also cheerfully appointed one of the officers of his Government, Mr. George Belford, as leader of the expedition. Mr. Belford, it will be remembered, accompanied Sir William MacGregor on his famous expedition to the summit of the Owen Stanley Range, and shared with Sir William in the perils of that most heroic of feats of scaling the culminating peaks of Mount Victoria. In crossing dangerous places of the Vanapa River, and on several other occasions, Mr. Belford's ready resources and untiring energy on that memorable expedition won the cordial appreciation of his leader.

The Kovio Range overlooks Hall Sound and the district of Motu Motu, between Port Moresby and the Aird River. Mount Yule, observed from several positions, was formerly supposed to be the culminating peak of that range, but the results of this expedition necessitate a modification of former views that must now give place to the condition of facts which point to Mount Yule as an isolated mass, rearing its majestic crown skywards from the lowlands of the St. Joseph District, the exhalations from which accumulating in dense masses daily enshroud its sombre head in obscurity. This disintegration of the most prominent physical feature of the district is probably accounted for by the character of the formation of the country, which the expedition pronounced volcanic.

From the summit of Mount Yule, although occupied by the expedition for only one hour, a rather large sheet of water was observed, but no data are yet to hand wherewith to define its position.

The geological character of a part of the country traversed appeared to be schistose, associated with traces of gold.

A forest mantle clothes the Kovio Range to its very summit, and native paths traverse its rugged sides and crown, while numerous villages are scattered over it, its outliers, and adjoining lowlands. These and other favourable signs indicate the occupation of this region by a moderately dense population of natives.

Being fully occupied in obtaining information concerning the physical features of the country, no attempt was made by the expedition to open up relations with the Papuans.

During the progress of the expedition very wet weather was experienced, and the animal life met with was very scarce.

Regarding the results of the expedition, it is probable that owing to the shortness of the time occupied on the summit of Mount Yule the geographical data may not be extensive.

THE GEOGRAPHY OF THE ZIMBABWE RUINS IN MASHONALAND.

By Mr. J. THEODORE BENT, F.R.G.S.

THE ancient geography of the East Coast of Africa is a subject fraught with considerable difficulty, seeing that our accounts are not only meagre, but written by men who had no practical knowledge of the extent of operations carried on outside the limits of the Red Sea. A faint echo in far remote ages comes to us from the inscriptions and illustrations on the walls at Deir-el-Bahiri, in Egypt, of an expedition to the remote and somewhat dubious Land of Punt, which some authorities have put down as the Somali coast, under Queen Hatsou of the 18th dynasty, in the 17th century B.C. The people of Punt are depicted as sending as tribute ebony, ostrich feathers, leopard skins, giraffes, lions, living leopards, cynocephalous apes, ingots of gold, and elephant tusks, all products of South-East Africa. Even the long-tailed bird common in those parts is depicted on one of the reliefs. This confirms in a curious manner the account given in the Bible of the products brought to King Solomon about seven centuries later in his commercial expeditions in conjunction with the Phœnicians. Gold was the prominent feature, doubtless, of all these expeditions, and of the gold brought from Arabia and Phœnicia Holy Writ, as well as classical lore, speak with overwhelming force. That the Arabians who traded and lived on the Indian Ocean had a knowledge of the monsoons—without the aid of which these voyages could not have been undertaken—long before Hippalus introduced them to the knowledge of the Western world goes almost without saying, and, with a knowledge of the monsoons, the coasting along the east of Africa must have been a far easier thing than voyages to the Canaries or Great Britain, which the early Phœnician traders are well known to have made.

It is most unfortunate for the study of ancient geography that the knowledge possessed by the Phœnicians and Arabians is lost to us for ever. The monopolising policy of these nations induced them to conceal from other countries the extent of their commercial relations, and the facts handed down to us by such men as Marinus, of Tyre, the anonymous author of "The Periplus of the Red Sea," and Ptolemy, are obviously not the knowledge possessed by the traders of the world, for they do not even attempt to elucidate the question of where the precious commodities actually came from which they enumerate. Even classical lore does not give us much information concerning this part of the world. It is a strange fact that even Greek legendary lore tells us of an expedition in search of a golden fleece, and a halo of mystery has for ever hung—and probably will ever hang—over the destination of this mythical expedition. We have the curious fact of the porterage of the ship Argos from river to river and sea to sea; its ultimate return by way of the great stream Oceanus, which encircles the world and the Nile valley—facts which can in no way be reconciled with its supposed visit to Colchis and the east of the Black Sea. Altogether it seems to me likely that this legend is based on the accounts of some of the early Phœnician treasure voyages related by the Greeks, as their custom was, in accordance with their own hazy knowledge of the geography of the world.

Herodotus is the first classical writer who gives us any written data to go upon, and his remarkable statement concerning the circumnavigation of Africa has been long considered as one of his fables—in fact, he himself scoffs at the Phœnicians for saying that in their return home they saw the sun on their other side, which would naturally have been the case had they returned by the West Coast of Africa. That there was considerable enterprise going on on the East Coast of Africa Herodotus gives us further testimony — Herod II., 30. In speaking of the garrison at Elephantine against the Ethiopians, he tells us that in the time of Psammitechus 240,000 soldiers revolted to the Ethiopians, by whom they were assigned land to the south of Ethiopia, " a voyage and land journey of four months " from Elephantine. This statement, if accurate, would naturally bring them very far south indeed on the East African coast. By the influence of these emigrants (continues Herodotus) the Ethiopians became more civilised, and learned the manners of the Egyptians. This Ethiopian territory, he tells us, produced much gold, and the inhabitants worshipped only Jupiter and Bacchus.

Ptolemy's information is vague. He gives us such names as Cape Aromata (supposed to be Guardafui) and the inland province of Azania, with a port at Rhapta, and other places on the east coast, which he mentions as trade emporia, and thereby implying that they were stations of considerable importance.

The " Periplus " enters into further details, and tells us that the Arabians stationed at Rhapta were subject to the sovereign of Maphartes, a dependency of Sabæa or Yeman. There has been much controversy concerning the position of this place Rhapta. I am inclined to agree with Dean Vincent that it is 10° south of the equator, at the spot now called Quiloa, after the Kilwa Arabs, who had a settlement here in the middle ages, and from which place Sir John Kirk has produced valuable evidence, in the shape of Persian and Celadon pottery, to prove the intercourse of these Arabs with the Persian Gulf.

After Rhapta, the "Periplus" mentions yet another place, called Prasum, and after that it says "the ocean curves round towards sunset, and, stretching along the southern extremities of Ethiopia, Libya, and Africa, amalgamates with the western sea"—a curious confirmation of the supposition that Africa had before this been circumnavigated; and, besides this, Posidonius, Eratosthenes, and Strabo all concur in the opinion, or theoretical possibility, that Africa could be circumnavigated, a statement which they would hardly have so unanimously brought forward unless they had some definite grounds for their belief in it.

Next let us consider the almost unanimous testimony of antiquity to the gold of Arabia. The Old Testament has endless references to it and the wealth of the Sabæan race who occupied the southernmost part of the peninsula.

Aristæus tells us that gold and precious stones were brought to Rome—*διὰ τῶν 'Αράβων*—not from Arabia, but by the Arabians. Horace speaks significantly of the Thesaurus Arabum, and Agatharicide, B.C. 120, speaks in glowing terms of the wealth of the Sabæans. The relations between the Phœnicians and the Sabæans is borne testimony to in Ezekiel xxvii. 22: "The merchants of Sheba and Raamah, they were thy merchants: they occupied in thy fairs with chief of all spices, and with all precious stones, and gold." A relationship owing doubtless to common Semitic origin, commercial tastes and similarity of religion and custom. The testimony of Scriptures and classical references would point to the fact that the Arabians found the gold, and that the Phœnicians with their larger commercial relations dispersed it over the world.

All travellers concur in testifying to the fact that little or no gold came from Arabia itself. Hence arises the question, From whence did they obtain the large quantities with which they are credited? Having seen the enormous amount of gold workings and shafts sunk in remote antiquity in Mashonaland, crushing stones, furnaces, crucibles, and ingot moulds; having examined the ruined temples and fortresses still standing there bearing testimony to the architectural skill, the mathematical accuracy and the knowledge possessed by this race, I think the question is sufficiently answered that, in part at least, the gold of ancient days came from here.

It has been remarked that if such was the case traces of large emporia would be found on the coast; but anyone who knows the formation of this coast would recognise at once how impossible this is, the flat belt of plain is here all alluvial, rapidly increasing year by year as the rivers wash down the soil from the mountains. Even Sofala, a mediæval fortress erected by the Portuguese, is now nearly buried and abandoned. Anything erected at a much earlier period must have long since disappeared, and another difficulty is thus thrown in the way of those who wish to determine on the question of the ancient geography of the East Coast of Africa.

The next period during which we can obtain any geographical information concerning the East Coast of Africa is shortly after the introduction of Mahommedanism, and written accounts of travel began to appear amongst the Arabians. El Masoudi, the Herodotus of Arabia as he is called, speaks of the country and the people who inhabited it. Two Arab voyages of travel in 851 A.D., published by M. Renandot, Abulfeda Abouzeid, and Zaneddin, all contribute a few scraps to our information, which are of especial value, as they all agree in the various points on which they touch.

Of Arabian enterprise in Africa we have other evidence prior to this period. The Sabæan king, Kharah'bil, in A.D. 85, was in possession of the East Coast of Africa to an indefinite extent. The Greek inscription from Axume, in Abyssinia, copied by Mr. Salt, states how Ainxanes "was king of the Axumites, of the Homerites, of the Ethiopians, and of the Sabæans," and would thereby imply that the Abyssinians, colonists originally from Arabia, had become the more powerful nation. Mahomed's daughter and her husband fled for refuge to Abyssinia at the time of the Hegira. But at some period, probably shortly after the Christian era, an irruption of savage tribes, called by El Masoudi the Zendj tribes, overran the country south of Abyssinia, and came even as far as Sofala.

All the above-mentioned authors concur in stating that the Zendj tribe overran the gold region behind Sofala, and Arabian traders were at that time almost confined to the coast, where they obtained from these savages gold and other commodities by barter.

In reading the various descriptions given us by these authors of the savages who inhabited this region at that time, it is impossible to avoid recognising in them the same peculiarities that distinguish the Kaffirs of to-day. They were naked savages, steeped in the lowest depths of barbarism, who filed their teeth as they do now. Masoudi, Zaneddin, and Abouzeid describe exactly the witch doctor as he is now, the sacrifices to the ancestors, the love of brass ornaments and contempt of gold, the methods of catching game, the beer they drink, and many other minor customs which identify the race with those who at present inhabit it. Hence we may conclude that certainly for a thousand years this part of Africa has undergone little or no change, and that the descent of the tribes which Masoudi speaks of as Zendj was the epoch at which the former civilisation was destroyed and the stupendous ruins of Zimbabwe and others in

Mashonaland, and the great mining industry, were abandoned, unless there was a previous wave of savages over this country concerning whom we have no record.

Masoudi makes mention of Sofala as the place to which the Arabians of his time went habitually for trading purposes, and from his time until the advent of the Portuguese towards the close of the 15th century we have no records to go upon. However, when the first Portuguese expeditions arrived they found the Arabians still in possession of the coast towns, trading with the natives, and the contest for supremacy during the ensuing two centuries was between the Arabians and the Portuguese, much as it is now in our days between the Portuguese and the English. Corvo, in his work, " As Provincias Ultra Marinas," tells us that " the early Portuguese did not more than substitute themselves for the Arabs in the ports that those occupied on the coast; and their influence extended to the interior very little, unless indeed through some acts of violence or through some ephemeral alliance of no value whatever, and through missions without any practical or lasting results."

After consulting all the Portuguese authorities on this subject at Lisbon and in the libraries that I could get hold of, I have arrived at the same conclusion myself. Father Dos Santos is undoubtedly the most reliable of all the records of travel in this country, and he describes the inhabitants of Mashonaland in detail, much as a traveller of to-day would describe them.

Couto, another writer, localises the extent of their influence, namely, to three fairs or settlements in the Mazoe valley, Luamhe, Bucato, and Massapa, where they had also mission stations as well as trading depots.

This valley was approached from Tete on the Zambesi, near to which town the Mazoe river joins the larger stream.

De Barros gives us a very valuable account of the ruins at Zimbabwe, proving to us that they were in much the same condition in his days as they are now; but his account of them is obviously that of hearsay only, being derived, as he candidly tells us, from " Arabs who had been there." He describes the massive walls built of " marvellous great stones," whereas the peculiarity about them is that they are small; the fortress he describes as square, whereas it is round; but that he is speaking of the same ruins is proved by his mention of the large round tower, the exact height of which he gives. But then, again, he places this tower on the top of the hill instead of the bottom—all facts which prove that the Portuguese were never there, but heard marvellous tales thereof from the Arabs at the coast towns.

This story of the ruins runs through every account of this country, and is substantially the same, though with slight variations. It is found in many Portuguese accounts, in early

Dutch, German, and English geographies, and grew to be considered somewhat in the light of a fable or a traveller's tale, until thirty years ago the German traveller, Karl Mauch, penetrated to Zimbabwe, stayed there for a day or two, and gives us a fairly accurate account of their size and extent. Even this account was hardly accredited until the advent of the pioneer force of the British South African Chartered Company in 1890 brought certainty, and afforded us an opportunity of examining them and excavating there.

The results of our work are numerous and complex, proving the establishment here of a highly civilised and commercial race, well skilled in the arts and in building, whose object was that of collecting gold. Space will not permit me to enter here into full details concerning our finds and the deductions we have made from them, but the exhaustive account of what we did or found, will, I expect, inaugurate a new line of geographical and archæological research.*

The Teachers' Training School for boys' manual work. Leipzig offers, from the 2nd April till 6th May, to teachers of Reformatory or Industrial Schools and Deaf and Dumb and Blind Asylums, a course of instruction of five weeks, in which certificates of competency can be gained in two branches of work. At the same time a course is offered for country teachers. In the first course instruction will be given in cardboard work, work at the bench, wood-carving or light metal work. Teachers may choose one or two branches. If two are chosen, equal time will be given to each. The country teachers may select (*a*) instruction in the management of a country school garden ; essentials of floriculture ; cultivation of vegetables with forcing beds ; the management of the soil, planting, &c. ; the most important points in the management of fruit trees and grafting, &c. ; or (*b*) wood work suitable to country conditions, ; work with the knife. at the vice or bench ; or (*c* simple metal work, with hammer, chisel, wedge, drill, shears, file, and soldering. Opportuity is given in this branch for pursuing two courses. Courses will be open from the 2nd to the 29th July, and from the 3rd to the 29th August. It is recommended that teachers should take both series, as they are divided only to suit the convenience of those who cannot find time in one year to take both courses. The subjects are the same as above. A course will also be arranged for the summer holidays, beginning on the 18th July, to open on the 20th, and continue till the 15th August. At the same time as this summer course an experiment is to be made specially for teachers of secondary and higher schools, in which the elements of work in cardboard, wood, and metal are to be applied in the construction of simple objects, and apparatus for natural geopraphical, historical, mathematical, and physical instruction. Lastly, from the 3rd September to 7th October, a five weeks' course is to be given in the same subjects as mentioned above, adapting the garden teaching to the season. Certificates will, if desired, be given to those attending in accordance with what they have done. Theoretical lectures will be given, and the libraries and collections of the Government will be open to students. The fee for the four weeks' course is 50 marks, and 10 marks for material. Objects made remain the property of the students. For a five weeks' course the fee, inclusive of materials, will be 75 marks. The cost of spending four weeks in Leipzig will be about 200 marks. Applications may be made to Dr. W. Götze, Kaiser Wilhelm Strasse, Leipzig, 19. ii.

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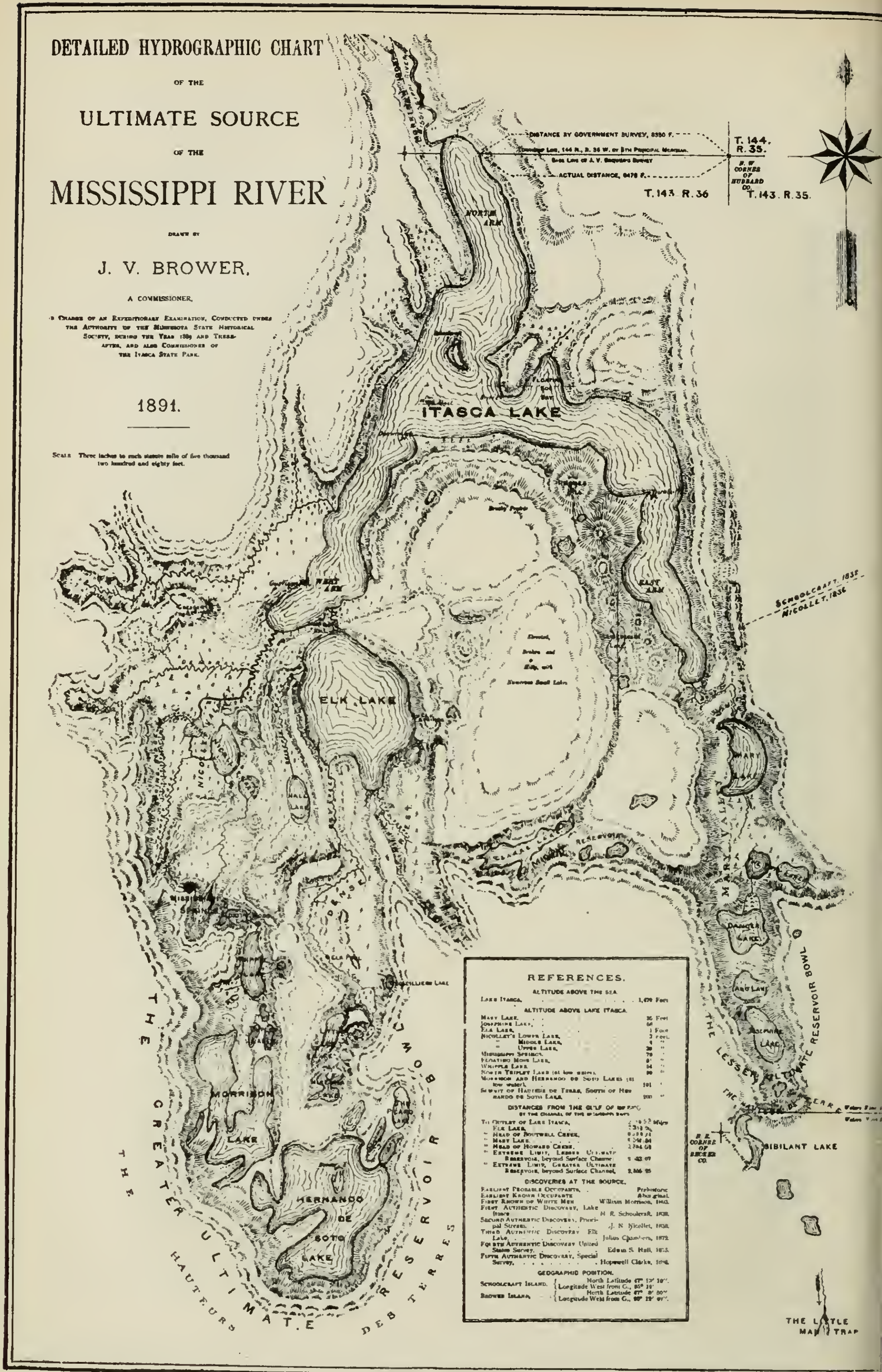
* Mr. Bent is expecting to issue a full account of his explorations at Zimbabwe, in course of the year 1892.



DETAILED HYDROGRAPHIC CHART
OF THE
ULTIMATE SOURCE
OF THE
MISSISSIPPI RIVER

DRAWN BY

J. V. BROWER,

A COMMISSIONER,

In Charge of an Expeditionary Examination, Conducted under the Authority of the Minnesota State Historical Society, during the Year 1889 and Thereafter, and also Commissioner of the Itasca State Park.

1891.

Scale Three inches to each statute mile of five thousand two hundred and eighty feet.

REFERENCES.

ALTITUDE ABOVE THE SEA

Lake Itasca,	1,670 Feet

ALTITUDE ABOVE LAKE ITASCA

Mary Lake,	36 Feet
Josephine Lake,	60 "
Elk Lake,	1 Foot
Nicollet's Lower Lake,	3 Feet
" Middle Lake,	4 "
" Upper Lake,	30 "
Mississippi Springs,	70 "
Floating Moss Lake,	8' "
Whipple Lake,	84 "
North Triplet Lake (at low water),	90 "
Morrison and Hernando de Soto Lakes (at low water),	101 "
Summit of Hauteurs de Terre, South of Hernando de Soto Lake,	200 "

DISTANCES FROM THE GULF OF MEXICO,
BY THE CHANNEL OF THE MISSISSIPPI RIVER

To Outlet of Lake Itasca,	[illegible] Miles
" Elk Lake,	[illegible]
" Head of Boutwell Creek,	[illegible]
" Mary Lake,	[illegible]
" Head of Howard Creek,	[illegible]
" Extreme Limit, Lesser Ultimate Reservoir, beyond Surface Channel,	[illegible]
" Extreme Limit, Greater Ultimate Reservoir, beyond Surface Channel,	[illegible]

DISCOVERIES AT THE SOURCE.

Earliest Probable Occupants,	Prehistoric
Earliest Known Occupants	Aboriginal
First Known of White Men	William Morrison, 1803
First Authentic Discovery, Lake Itasca	H. R. Schoolcraft, 1832
Second Authentic Discovery, Principal Stream,	J. N. Nicollet, 1836
Third Authentic Discovery, Elk Lake,	Julius Chambers, 1872
Fourth Authentic Discovery, United States Survey,	Edwin S. Hall, 1875
Fifth Authentic Discovery, Special Survey,	Hopewell Clarke, 1886

GEOGRAPHIC POSITION.

Schoolcraft Island,	North Latitude 47° 13' 30". Longitude West from G., 95° 10'
Brower Island,	North Latitude 47° 9' 00". Longitude West from G., 95° 12' 07".

Printed for the Journal of the Manchester Geographical Society by Benj. O'Connor, 4 Fountain St. Manchester

THE SOURCE OF THE MISSISSIPPI RIVER.—(*See Map.*)

By Mr. J. V. BROWER.

[Read to the Members, in the Library, October 14th, 1891.]

Geographical discoveries in the State of Minnesota having been erroneously questioned and persistently misrepresented, the Minnesota Historical Society and citizens, proud of the honour that the great State held within her limits the source of the Mississippi river, caused a detailed hydrographic survey of the Itasca basin to be made, and an exhaustive report thereon has been completed. Antedating the publication of the report, the following information is given in advance, for the information of those who desire the perpetuation of geographic facts and the truth of history, the same having been called for by His Excellency the Governor of the State, and duly reported:—

[COPY.]

Minnesota Historical Society, St. Paul, Feb. 12, 1889.

To J. V. Brower, St. Paul, Minnesota.

Sir,—Reposing especial confidence in your ability, integrity, and good judgment, the Minnesota Historical Society, together with other similar societies who may unite with us for this object, does hereby appoint and commission you to make a careful and scientific survey of Lake Itasca and its surroundings, with the view of determining, by a thorough examination of the spot, and of all its physical features, under all circumstances, what is the true and actual source of the Mississippi river.

We therefore request you to select such a corps of assistants as you may need to properly carry on such survey, and proceed to Lake Itasca, prior to the opening of spring, to take the necessary observations with the above object.

On the completion of your survey you will please make a report to us of the result of your investigations.

On behalf of the Minnesota Historical Society,

Henry H. Sibley, President.
[L. S.] J. Fletcher Williams, Secretary.

[COPY.]

State of Minnesota, Executive Department.

William R. Merriam, Governor of said State, to J. V. Brower,
of Ramsey County, sends greeting:

Reposing especial trust and confidence in your prudence, integrity, and ability, I have appointed you, the said J. V. Brower, as Commissioner of the Itasca State Park, pursuant to an Act of the legislature of this State, approved April 20, 1891.

You are therefore by these presents appointed and commissioned Commissioner of the Itasca State Park, as aforesaid, to have and to hold the said office, together with all the rights, powers, and emoluments to the said office belonging or by law in anywise appertaining, until this commission shall be by me or other lawful authority superseded or annulled, or expire by force or reason of any law of this State.

In testimony whereof, I have hereunto set my name and caused the Great Seal of the State of Minnesota to be affixed at the capitol, in the city of St. Paul, this fourth day of May, in the year of our Lord one thousand eight hundred and ninety-one and of the State the thirty-third.

By the Governor, WILLIAM R. MERRIAM.
[L. S.] F. P. BROWN, Secretary of State.

THE GOVERNOR'S REQUEST.

State of Minnesota, Executive Department,
St. Paul, August 3, 1891.

Hon. J. V. Brower, Commissioner of the Itasca State Park,
460, Jackson Street, City.

Sir,—Publications in the papers of the State have been made within a few days past regarding the reputed discovery by a citizen of the State of New York of a new source of the Mississippi river, which he claims to have made in 1881, and has since widely published his right to be considered as its original discoverer, and causes changes to be made in the maps of our State in support of such discovery.

My attention has been called to these statements by citizens interested in the truth and correctness of the geography of our State, and it is desirable to have some definite and correct statement officially made as to the hydrographic and other features of the Itasca basin, authorised by law to be set apart as a public State park, gained from a thorough physical knowledge of the same, to the end that facts regarding the ultimate source of the Mississippi river may be established and published for the benefit of the people of this State. I therefore request you to report to this department any facts in your possession which may be deemed pertinent to this question which has come to your knowledge as commissioner or otherwise.—Yours respectfully,

WILLIAM R. MERRIAM, Governor.

THE COMMISSIONER'S REPORT.

State of Minnesota, Itasca State Park, Commissioner's Office,
St. Paul, Minnesota, August 13, 1891.

His Excellency, William R. Merriam, Governor of Minnesota.

Sir,—I have the honour to acknowledge the receipt of your favour of the 3rd instant, requesting me to report to your department any facts in my possession, as Commissioner of the Itasca State Park, or otherwise, descriptive of the hydrographic and other features of the Itasca basin, authorised by law to be set apart as a public park, to the end that facts regarding the ultimate source of the Mississippi river may be established and published.

During the year 1889, as a special Commissioner of the Minnesota Historical Society, a co-ordinate branch of the State government, I made a detailed hydrographic survey of the source of our great river, and formulated an exhaustive report thereon, which has not as yet been published.

From the field notes then taken, the correspondence, and all examinations and researches made, I have the honour to report the following facts for the use of the executive department of Minnesota :—

The drainage basin of the Mississippi river extends from the Gulf of Mexico, at the mouth of the river, to an ultimate limit above and beyond Itasca lake in this State. This great basin, more than 1,000,000 square miles in extent, is bordered on the east by the Alleghany and other ranges, and on the west by the Rocky Mountains, and contains about 100,000 rivers and streams, which flow toward and finally discharge their waters into the Mississippi, principally through the mouths of the larger and more important confluent and affluent tributary rivers. These waters are entirely supplied by the copious precipitation characteristic of the fertile basin drained from north to south by the Mississippi, as its principal and most important river.

To follow the proper rule in ascertaining, under commission, the true and actual source of this principal river, for geographic purposes, I consulted European and American geographers, scientists and authorities, gaining the following varied information as to what constituted the source of a river :—

" That the main stream of a river is that which flows along the lowest depression of the basin, and that a tributary which descends into it from a higher elevation, even if longer, is not to be considered the main stream."

" A river cannot have a source, but many sources."

" All our rivers have their source in the clouds."

[This authority does not say that the clouds emanate from the oceans of the earth, or whence came the oceans.]

" The head of the longest continuous channel."

"The sources of a river which are in a right line with its mouth, particularly when they issue from a cardinal point and flow to the one directly opposite."

Other authorities, some remote, and but a few reliable, suggest that the source must be a lake ; must be the largest lake ; should be the inner flanks of the heights of the land surrounding it ; should be the source, because it was next to the historic pass, by which one river had, from ancient times, been left to reach another ; because it was farthest from the mouth of the system ; because it led down to the axis of the general valley of the basin ; because it was at the head of the stream of largest volume ; because it was geologically oldest, &c.

This widespread variance of authorities, good, bad, and indifferent, gave me but little comfort in an interesting geographic and historic research, the source of no two principal rivers of the world being alike, and I arbitrarily adopted a reliable rule of no uncertainty, a rule of nature, in ascertaining where the waters were gathered which form the ultimate source of the Mississippi, and for that purpose the length of the main river in statute miles, up through the valley of the basin, was ascertained from the official records of the United States Government and otherwise, with the following result :—

	Miles.
From Gulf of Mexico, at the south-west pass, up the channel of the river to city of New Orleans	111·00
From city of New Orleans to mouth of Ohio river	965·50
From mouth of Ohio river to city of St. Louis	182·00
From city of St. Louis to city of St. Paul	728·75
From city of St. Paul to falls of St. Anthony	13·00
From falls of St. Anthony to Winnibigoshish lake	432·50
From Winnibigoshish to range 36 west of fifth principal meridian*	96·50
From range 36 west to fifth principal meridian to foot of Itasca lake	17·27
Total	,546·52

Thus it appeared that the main river of the Mississippi basin extends from the Gulf of Mexico to the Itasca basin, a limited, permanent depression upon the surface of the earth at the ultimate source of the river.

The geologic and natural features predicating this conclusion are so well known and established that no reference to them seems necessary in this communication, excepting the possibility that the Missouri river, remotely suggested by occasional inquirers, might be called the main river ; but inasmuch as it is a confluent branch of the main stream, coming in at one side, similar to the Ohio and Red rivers, I see no good reason for discussing that question at this time, nor do I deem it necessary to follow the historic data, however interesting, which has brought to our notice and knowledge the existence of the main river extending from the Gulf to the Itasca basin, where it takes its rise, for there can be no well-founded disagreement as to that fact, because the discovery of the Mississippi, by piecemeal, is co-extensive with the discovery of the coast line of North America, and the facts are indisputable, in consequence of which I must base my reply to your executive communication upon the facts as they have been found to exist at and above Itasca lake, which has been for so many years recognised as the true source. To definitely determine those facts it became my official duty to ascertain whence came the waters of Itasca lake. This required a line of levels in the field with the following result, to ascertain elevations above the sea :—

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* The official surveys of the United States extend, upon the main river, only to the point where range 36 west of the fifth principal meridian intersects the channel of the river to and beyond Itasca lake. The fractional miles are taken from the record as it exists.

	Feet.
Gulf of Mexico	0·0
City of St. Louis, above the sea	384·8
City of St. Paul	680·5
Above falls of St. Anthony (Minneapolis)	782·0
Below Pokegama Falls	1,248·0
Winnibigoshish lake	1,292·8
Cass lake	1,302·8
Itasca lake	1,470·7

The official reports of the United States Government give the elevations to and including Cass lake, and an actual line of levels across the country from the railroad system of this state to Itasca lake, run by me in 1889, demonstrated its actual elevation above the sea at its outlet. The railway levels connect with the Government levels.

With the distances and elevations thus ascertained, my survey of the ultimate source of the Mississippi river commenced in March, 1889, upon the frozen surface of Itasca lake, at the centre of the channel of the river, at its *debouchure*, from the extreme north end of the lake.

At a remote age the Itasca basin was the bed of one lake, now extinct, which I deem it a privilege to designate as Lake Upham, and from this one lake, of unknown ages, by erosion, the waters probably having been increased by copious precipitation, cut their way through the ice formation and alluvial stratum to a natural condition of the river bed, as it now exists, immediately below Itasca lake. This process of nature, the waters passing to lower levels, has given us nearly one hundred lakes and lakelets within the Itasca basin, systematically divided apart, each of a different elevation, up the inner flanks of the Hauteur de Terre, surrounding the whole, from the summits of which the waters are returned to the oceans, through Hudson's Bay and the Gulf of Mexico, the Itasca basin itself being about seven miles long and five in width, and subsidiary to the main basin of the Mississippi.

The formation of Itasca lake is a small body of water at and around Schoolcraft Island, and three long, narrow arms projecting—one to the south-east, one to the south-west, and one to the north—from the last of which the Mississippi passes out from the lake. From the south-east and south-west extremities of the lake, picturesque valleys extend, denominated Mary Valley and Nicollet Valley, respectively, and up these valleys numerous lakes exist, each at a higher elevation as you pass up the respective valleys than the one below, and each valley is drained by a running stream of perennial flowage, while at the side of the west arm Elk lake is situated, connected with Itasca by Elk creek.

Lines of measurements and of levels were run to and up through each of these localities.

The distances are as follows :—

	Feet.
From the outlet of Itasca to the extreme south-east point at the mouth of Mary creek	22,639
Up the channel of Mary creek to Mary lake	3,658
Total	26,297
From the outlet of Itasca to the extreme south-west point at the mouth of Nicollet's Infant Mississippi	17,926
Thence up the channel to Nicollet's middle lake	8,513
Total	26,439
From the outlet of Itasca to the mouth of Boutwell creek	13,627
Length of Boutwell creek	8,700
Total	22,327
From the outlet of Itasca to the mouth of Elk creek	16,727
Up the channel of Elk creek to Elk lake	1,100
Total	17,827

These are the only streams entering Itasca lake worthy of any consideration. The volume of water, width, depth, and flowage of these several streams was carefully ascertained, and the largest and most important one, at all times they have been examined by me, in 1888, 1889, and 1891, Nicollet's Infant Mississippi river, has been found to be the largest in volume of water and the larger and more important in every particular, with several perennial branches augmenting its prominence above the south-west limit of Itasca lake where it discharges its waters into the lowest in point of elevation of the several lakes there situated.

Selecting Mary Valley and Nicollet Valley as the two most remote watersheds within the Mississippi basin, the ordinary rules of hydrography were applied, and it was found that Mary Valley contained the lesser ultimate reservoir and Nicollet Valley the greater ultimate reservoir of the Mississippi system, each separate and distinct, drained by natural surface flowage. Then came the application of nature's common rule as to whence came the waters supplying the streams draining these two ultimate water systems at the source of the Mississippi.

It having been found that Nicollet Valley contained the more important reservoir, supplying to Itasca lake the larger and longer volume of surface flowage, I beg your indulgence in a minute description of this most remote and ultimate system in the great Mississippi basin, situated within the State park.

The perennial stream flowing down the inner flanks of the Hauteur de Terre to Itasca through Nicollet Valley was discovered by Jean N. Nicollet in 1836. At the point where its waters flow into Itasca lake it was forty feet in width and two feet in depth at the date of my survey. Narrowing as you ascend the stream, it becomes three feet in depth a short distance from Itasca lake, with an increased current.

Passing up this interesting stream the explorer is impressed with its importance by its sharply defined banks, with its winding, meandering channel, deeply cut down into the stratum to a sandy, gravelly bed, with every appearance and characteristic of the Mississippi below Itasca lake. It has sand-bars, sharp angles in its channel, deep and shallowing currents, and all the more striking features of a larger river. Large trees found near its banks incline toward the stream ; a variety of fish, large and small, were found in its waters ; the mink, otter, and musk-rat abounded, and wild ducks of many Northern varieties were from time to time noticed in its channel. Trees have been felled in several places across its banks to permit of passage on foot.

Upon the removal of these trees, canoes might be propelled nearly two miles up this principal channel from Itasca lake.

These are a portion of the characteristics of the stream, indicating its permanency and importance, and, what is true of no other stream within the State park, it has three affluent branches flowing in from the heights of land to the westward, which augment its importance and permanency above any other stream found there.

These are Demaray creek, over one mile in length, Howard creek, nearly one mile in length, and Spring Ridge creek, each fed by numerous springs, sharply indicating artesian pressure from the lakes higher up the flank of the Itasca moraine. At Nicollet's middle lake is found the northern limit of the Greater Ultimate Reservoir, with the Mississippi river flowing out from it toward Itasca lake.

My lines of level and measurements were continued from this point up through the trough of the reservoir to Nicollet's upper lake, of doubtful existence, to the Mississippi springs, Floating Moss lake, Whipple lake, the Triplet lakes, Morrison lake, and Hernando De Soto lake, the last named being the most elevated and distant water from the Gulf of Mexico within the Mississippi basin, exclusive of waters emanating from the summit of the Rocky Mountains at the source of the Missouri.

Elevations above the sea at the Greater Ultimate Reservoir are as follows :—

	Feet.
Nicollet's lower lake	1,473
Nicollet's middle lake	1,474
Nicollet's upper lake	1,509
Mississippi springs	1,548
Floating Moss lake	1,561
Whipple lake	1,564
The Triplet lakes	1,568
Morrison lake	1,571
Hernando De Soto lake	1,571
Summits of Hauteur de Terre	1,670

The summits of the Hauteur de Terre (heights of land), immediately west of Hernando De Soto lake, divide the ultimate waters of the Mississippi from those of the Red River of the North.

The first surface flowage in the Greater Ultimate Reservoir is a tiny brook connecting Whipple lake with Floating Moss lake. Down the incline from Floating Moss lake the Mississippi springs send forth a surface channel to Nicollet's upper lake, while 300 feet west and 20 feet lower the channel again appears in a continuous surface flowage to Itasca lake, which is 9,200 feet to the north. It might be well to mention the fact that the head of Howard creek, a small and picturesque little stream with several miniature waterfalls, in connection with the Infant Mississippi, constitutes the longest surface channel, shown as follows :—

	Feet.	Miles.
Gulf of Mexico to Itasca lake		2,546·52
Thence to the mouth of Nicollet's Infant Mississippi	17,926	
Thence to head of Howard creek	11,126	
	29,052	5·50
From Gulf to head of Howard creek		2,552·02

Other channel distances are—

	Miles.
From Gulf to head of Mary creek	2,551·50
From Gulf to head of Boutwell creek	2,550·74
From Gulf to Elk lake	2,549·90
From Gulf to extreme limit of the Greater Ultimate Reservoir it is	2,555·25
From Gulf to the extreme limit of the Lesser Ultimate Reservoir it is	2,553·47

The great river having now been actually measured in its entire channel length by connecting surveys, the distances given, for the first time, are certainly more accurate than mere guess-work.

Since the Greater Ultimate Reservoir is the extreme limit of the Mississippi basin, and the largest, longest, and most important stream above Itasca lake takes its rise therein as a perennial surface drainage, I have reported the same to the Historical Society as the ultimate source of the Mississippi.

ELK LAKE AND ITS DISCOVERY.

In 1836 Scientist and Astronomer Nicollet laid down Elk lake as an estuary of Itasca, but since that time the alluvial stratum at the outlet of Itasca has been diminished by the constant flow of the water current until the latter lake has receded from the former to a lower level, and the two lakes are now connected by a short creek. The original discovery of this creek and of Elk lake must be awarded to Julius Chambers, who, on the 9th of June, 1872, while encamped on Schoolcraft Island, explored the shores of Itasca, passed up the channel of Elk creek in his canoe to Elk lake, crossed to the southern shore of the lake, and, making a map of the lake, wrote—

"Here, then, is the source of the longest river in the world in a small lake, scarcely a quarter of a mile in diameter, in the midst of a floating bog, the fountains which give birth to the Mississippi."

He found the lake much larger than he at first supposed. The world was notified by Mr. Chambers of his discovery in the columns of the *New York Herald*, page 8, July 6, 1872.

Mr. Chambers then passed down the Mississippi, from Schoolcraft Island to the Gulf of Mexico, in his canoe.

The next explorer to declare Elk lake the source was A. H. Siegfried, who, on the 13th day of July, 1879, reached the lake, and, taking a photograph of the same, declared it to be the "highest tributary to the Mississippi," in the columns of the *Louisville Courier Journal*, August, 1879.

The lake and creek were also visited in 1875 by Edwin S. Hall, in 1880 by O. E. Garrison, and in 1881 by the Rev. J. A. Gilfillan. Whatever significance may attach to Elk lake as the source, Mr. Chambers must be awarded the honour of a first and original discovery, to the exclusion of all others, except Indians, known in our history, and the name "Elk," officially promulgated by the authorities of the United States, is the proper and legitimate name for this body of water, acquiesced in by legislative enactment, and Elk creek takes its name from the lake. No one of the several brooks flowing into Elk lake are of any great importance, and all of them were completely closed with ice in March, 1889, and all of them were dry in August of the same year.

Geographic discoveries at and above Itasca lake prior to my survey in 1889, of authentic record, worthy of consideration and belief, are as follows :—

William Morrison, first of white men	1803
H. R. Schoolcraft, Itasca lake	1832
Jean N. Nicollet, Five Inlets	1836
Julius Chambers, *Elk lake and creek	1872
E. S. Hall, Government survey	1875
Hopewell Clark, special survey	1886

Itasca lake is at the lowest depression of the basin, and Hernando de Soto, Morrison, and numerous other lakes are at the summit of the basin, and the water pressure from the lakes above Itasca, the whole being exclusively supplied by precipitation, causes a contributary inflow into Itasca lake, which is increased or decreased from time to time, according to the quantity of rainfall or duration of drought, as either may prevail.

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* Elk lake and creek, discovered by Mr. Chambers in 1872, are constituted of waters erroneously claimed to have been discovered in 1881 by the person referred to in your communication.

One peculiar significance is demonstrated by the fact that Itasca lake has a flood plain of but little more than three feet in elevation above the natural surface of the lake. The flood plains of the lakes higher up are ten, fifteen, and twenty feet. Thus, while Itasca lake is alway supplied and sometimes rises during dry weather, the lakes at the summit dry down rapidly to a lesser surface area, depending upon rainfall to re-supply them. During the summer of 1890 copious rainfall caused Lake Itasca to rise a foot or more above Elk lake, and Elk creek flowed into, instead of out from, Elk lake. The outflow of Lake Pepin, through which the Mississippi takes its course, is controlled by the inflow, and Lake Itasca presents a striking similarity.

Infinitesimal deductions are necessarily drawn, however, from ascertained facts in order to discover the location of the ultimate source. Itasca lake lies at the pit of the basin and receives the waters discharged into it from summits surrounding it, which in return pass out into the channel below, forming the main watercourse of our country, to the Gulf. Consequent inferences may therefore be drawn by those who still believe that Itasca lake is the source of the river, it being situated at the pit of the lowest depression of the limited Itasca basin, but I know it to be a fact that there is a Greater Ultimate Reservoir there at the summit, and it constitutes the ultimate source.

To prevent unauthorised, erroneous, and deceptive changes in our State map, I suggest that a *résumé* of the historical and geographical facts which led up to the final determination to locate the State park at the source of our great river be included in my forthcoming report, and then, by legislative enactment, prohibit, within our own State, the illicit changes in the State map so assiduously persisted in from mercenary motives.

The law requires me to report a detailed chart of the park, and topographic field notes for that purpose will be completed in due time.

Very respectfully your obedient servant,

J. V. Brower, Commissioner.

ADDENDUM.

The Itasca State Park contains thirty-five square miles; includes the territory shown in the accompanying map; is singularly picturesque in nature's abundant scenery, high hills and summits, pine and balsam forests, and deep lakes prevailing.

The nomenclature, as far as completed, as directed by an order of the Minnesota State Historical Society upon a report of its committee, is as follows:—

Omoskos (Elk) Sogiagon (Lake)	Ojibway.
Lac La Biche	The French translation.
Elk Lake	The English translation.
Itasca Lake	From Ver-*itas ca*-put. Schoolcraft.
Schoolcraft Island	Named by Lieutenant Allen.
Infant Mississippi	Named by Jean N. Nicollet.
Nicollet's Lower Lake Nicollet's Upper Lake Nicollet's Middle Lake Nicollet's Valley	After Nicollet.
Bear Point	Named by Peter Turnbull.
Turnbull Point	So called by residents.
Floating Bog Bay	J. V. Brower's party, 1888.
Ozawndib Point	After Schoolcraft's guide.
Garrison Point	After O. E. Garrison.

Rhodes' Hill	After D. C. Rhodes, photographer.
Morrison Hill	After William Morrison.
Island Creek	Opposite Schoolcraft Island.
Mary Creek	After Mary Turnbull, now deceased. She gave birth to the first children born of white parents at Itasca Lake.
Mary Lake	
Mary Valley	
Elk Creek	Named by Committee.
Boutwell Creek	After Rev. W. T. Boutwell.
Crescent Springs	Crescent shaped.
Elk Springs	Named by Committee.
Elk Pool	Named by Committee.
Clarke Creek	After Hopewell Clarke.
Siegfried Creek	After A. H. Siegfried.
Demaray Creek	After Morrison's daughter.
Howard Creek	After Schoolcraft's daughter.
Mississippi Springs	The Committee.
The Twin Lakes	The Committee.
Danger Lake	The Committee.
Ako Lake	After Accault.
Josephine Lake	J. V. Brower's party, 1888.
Sibilant Lake	Form of the letter S.
Clarke Lake	After Hopewell Clarke, by A. J. Hill.
Little Elk Lake	The Committee.
Hall Lake	After Edwin S. Hall.
Groseillier's Lake	After first of white men to discover the upper Mississippi.
Radisson Lake	
Floating Moss Lake	The Committee.
Whipple Lake	By Rev. J. A. Gilfillan after Bishop Whipple.
The Triplet Lakes	The Committee.
Morrison Lake	After William Morrison.
Lake Hernando de Soto	In honour of the discoverer of the Mississippi.
Brower Island	Named by the Committee.
Mikenna Lake	Named by A. J. Hill.
Allen Lake	After Lieutenant Allen.
The Picard Lake	After Hennepin's companion.
The Lesser Ultimate Reservoir	Named by J. V. Brower, Commissioner.
The Greater Ultimate Reservoir	

Itasca lake was known as "Elk lake" prior to 1832. Surveyor General J. H. Baker, for the United States Government, continued the name "Elk" to another lake in 1876.

The committee of the Historical Society was constituted as follows: Captain R. Blakeley, Hon. I. V. D. Heard, and Hon. Charles D. Elfelt.

Upon submitting their report of names selected, the report was adopted.

The rule adopted by which to ascertain the source of the Mississippi proved most satisfactory and brought to the knowledge of the world the Greater Ultimate Reservoir, heretofore unknown to exist as such, although a portion of the lakes there situated have been known for many years, notably, Nicollet's lakes since 1836, and other lakes since 1875.

The discovery of Elk lake and creek was accomplished in the following manner:—

Jean N. Nicollet, in 1836, found, what is now Elk lake, to be a part of Itasca lake.

After the lowering of the river bed at the north end of Lake Itasca since 1836, Elk lake was left as waters gathered at one side, one foot higher than Lake Itasca, and after the process of nature had separated the two bodies of water and formed a short creek, of no great importance, between the two, Mr. Julius Chambers was the first to discover Elk lake and creek, and he declared it to be "The Source" of the Mississippi, July 9, 1875, and to him must be awarded whatever honour is due therefor.

The report made to the Minnesota Historical Society by its commissioner was referred back for the purpose of having the same properly edited for publication, and the same is not yet published. When published, as a geographical and historical record, it will contain about forty-three chapters, the last three of which are yet to be supplied, descriptive of the formation of the State park, and botanical and other observations.

The fact that formerly one large lake, with bays and islands and beeches, existed where now is found the several lakes at the Itasca basin, is beyond the inference of a mere conjecture, and to future explorers and geologists must be left the privilege and opportunity to locate its boundaries and determine its former importance ; and, until some further or more definite action, it has been designated Lake Upham by Professor George B. Aiton and J. V. Brower.

The importance of the several streams flowing into Lake Itasca in length, depth, width, and flowage is as follows :—

First—Nicollet's Infant Mississippi river, also called by him the "Cradled Hercules." Date of discovery, 1836.

Second—Mary creek.

Third—Elk creek. Discovered by Julius Chambers in 1872, when he declared it to be the Mississippi river.

Fourth—Boutwell creek.

Fifth—Island creek.

Sixth—Creek at Floating Bog Bay.

Seventh—Small creek at extreme south-west point of Itasca lake.

Careful observers will note the importance of the Greater Ultimate Reservoir, containing twenty or more lakes, at an elevation above Lake Itasca. These lakes impregnate the earth with water and numerous flowing streams abound as a natural result, Itasca lake and Elk lake each drawing its supply from above with the following difference in peculiarity : Itasca lake receives all the waters flowing down from the summits, while Elk lake receives and discharges less than one-half. The creeks entering Elk lake are completely frozen in winter and have been found to be dry in summer.

Terrible Sufferings of Explorers.—The survivors of the Yukon Valley (Alaska) prospecting party, which included Mr. James Ingram, Mr. J. Sperry, and Mr. F. C. Young, have arrived at San Francisco, and have brought terrible accounts of the sufferings they went through. They remained in the valley for some time and then started for home. Their provisions were soon exhausted, and they became too feeble at last to pull their boat, which had to be abandoned. They were ceaselessly harassed by mosquitoes and flies, their faces were bleeding, and their bodies covered with sores. At length they became so weak as to be unable to beat off the mosquitoes. Their eyelids were so inflamed that partial blindness ensued. Mr. Ingram, after vainly imploring his companions to end his misery by shooting him, sank in the snow and died. On the following day the same fate overtook Mr. Young. The rest continued to advance. They had been without food for a week, when suddenly they came upon a quantity of dead salmon. These they ate, while the tears ran down their cheeks for joy. Somewhat refreshed by the unexpected feast, they returned to look for the bodies of their dead companions. That of Ingram was found covered with mosquitoes. They buried it under branches of hemlock and placed a stone at the head of the grave. Young's body they never succeeded in finding, but the far-off howling of wolves indicated what had become of it. When the survivors reached Chilcott they were nearly dead from privation and suffering. Mr. Sperry's hair, which was brown, had become white as snow.—*Manchester Examiner and Times.*

ANTARCTIC EXPLORATION.

By E. DELMAR MORGAN, F.R.G.S.

[Read to the Members in the Library, October 30th, 1891.]

Nearly half a century has elapsed since the last British Antarctic Expedition, under Sir James Ross, entered the limits of the unknown South Polar region, half a century during which no active steps have been taken to continue exploration in that direction. The land and islands discovered by Ross and other navigators are stil delineated vaguely on our maps. Victoria Land, Mounts Erebus and Terror, Graham Land, Enderby Land, Wilkes Land, and a few islands, of which Kerguelen is the principal, are all that we know of a continent estimated to be as large as Australia. No attempts have been made to survey more precisely the coast line, and ascertain how far exploration may be pushed towards the South Pole. I desire to call the attention of the British public to the desirability of furthering Antarctic exploration, and to lay before them the following facts. In doing so I have been reminded that the subject has been before them as lately as 1886, when the British Association appointed a committee to urge Her Majesty's Government to undertake an expedition. No result, however, followed their initiative, and the interest excited at that time in the cause seems likely to die out. Quite recently, owing to the munificence of a Swede, Baron Oscar Dickson, and the enterprise of his countryman, the well-known Baron Nordenskiöld, supported to some extent, though as yet not very liberally, by the Australian Geographical Societies, an expedition, consisting of one ship, has been announced to start shortly for the South Polar region. Were it not for this liberality, this enlightened action on the part of two Swedish gentlemen, we should be no nearer now than we were five years ago to the attainment of Antarctic exploration. England, ever foremost in Arctic enterprise, draws back and apparently looks on with indifference, leaving the work so well begun by Cook, Ross, and others, to be resumed independently of her.

In endeavouring to account for the indifference and opposition the cause of Antarctic exploration has met with at home and in the colonies, I believe that difficulties have been unduly exaggerated and the probable results under-estimated.

A comparison of Arctic and Antarctic exploration shows that the risks to be incurred in the latter are not greater, but less, much less than those met with in the opposite Pole, and the most competent authorities on the scientific aspects are unanimous in pronouncing these to be of the highest importance. The Arctic record has been one long tale of disaster, suffering, and death. Brave men's lives have been sacrificed and ships have been lost in attempting a north-west passage, in vain attempts to reach the Pole and solve the mystery surrounding it. Think of the many expeditions that have left England for the Arctic region, the long dark winters passed by their crews in those dreary solitudes, the hardships, privations of every kind, the sickness, disease, and suffering, that have so often been their lot to bear, the ships that have been abandoned or crushed in the ice, the tales of castaways floating slowly southwards on an ice floe or in an open boat, battling with danger in every form, so that life itself seemed one constant struggle with death. These are the records printed on every page of the history of Arctic exploration from the days of Davis, Baffin, and Behring, to those of Nares and Greely. Yet undaunted by the perils and the risks, volunteers have always been ready to take part in any new expedition, and at this moment a Swedish expedition is being fitted out under Dr. Nansen, the hardy explorer of Greenland, and an American expedition under Peary, of the United States Navy, with the object of reaching the North Pole.

Now turn to the records of Antarctic enterprise, and you will find that only five expeditions have attempted to penetrate into high southern latitudes. These are the expeditions of Cook, of Bellingshausen, of Dumont d'Urville, of Wilkes, of Ross, and of the "Challenger" in 1874. For particulars I refer to an admirable summary by John Murray in the Proceedings of the Royal Scottish Geographical Society for 1886. In those five expeditions not a ship was lost or even seriously injured, no lives were sacrificed, and the results achieved for science were of the highest importance. The ships engaged were for the most part small vessels, and, except in the case of Ross's ships, not specially protected for Arctic navigation. They were, of course, unprovided with auxiliary steam power, of the greatest advantage in expeditions of this kind. Yet in almost every instance a high latitude was reached, and Ross twice crossed the parallel of 70° south. The "Challenger" must be excepted, but she was not fitted out for Antarctic exploration, and it was not intended that she should go very far south. To these five expeditions, and to the whalers who annually visit those seas, we are indebted for all the knowledge we possess of the Antarctic regions. We know from them that an ice barrier, from 175 to 200 feet high, presents an obstacle, though not an insuperable one, to further advance southward. We know that the general character of this ice, differing widely from the hummocky ice-fields of the Arctic region, is that of flat-topped areas of great extent, probably detached from the central ice-cap supposed to surround the Pole. No attempt has yet been made to ascend these great ice-tables, though it is highly probable that the future explorer, armed with the necessary appliances, and, perhaps, with captive balloons, may accomplish this without much difficulty. Neither have the coasts been surveyed and explored. Ross and d'Urville were the only navigators to effect a landing, the former only to collect a few specimens of the rocks. The depths of the sea, the temperatures and salinity of the water, the configuration and height of the land, the extent of the mountain ranges, these are some of the questions for the future Antarctic explorer to decide. We want to know more of Mount Erebus, the burning volcano of that south land, and if it be true, as hitherto observed, that no traces of animal or vegetable life are to be found there. Ross thought it possible to winter in the Antarctic regions, and would have done so had he been able to find a harbour for his ships. The first object of the next expedition must be to find such a harbour, and, having established their wintering station, probably on Victoria Land, within sight of Mount Erebus, to take advantage of the clearer atmosphere prevailing during the winter months for carrying out those observations, rendered impossible during the summer, owing to atmospheric causes. Such an advanced party of explorers would not be cut off from all communications with their fellow-men, for the Antarctic region, unlike the Arctic, is surrounded by a belt of ocean 2,000 miles wide, navigable throughout the year, by means of which news and supplies could be conveyed from the nearest ports of Australia, Tasmania, and New Zealand.

As already stated, a Swedish-Norwegian vessel, under the command of Baron Nordenskiöld, is about to explore the Antarctic region. Will not England co-operate? One ship is insufficient, a second is wanted to ensure success. Shall it be said that England declined to aid in a work which would form a fitting close to the nineteenth century, a century of discovery and exploration, by opening the last remaining gateway to the unknown?

THE FIELD OF GEOGRAPHY.

By Mr. E. G. RAVENSTEIN, F.R.G.S., F.S.S., President of the Section.

[An Address to the Geographical Section of the British Association, Cardiff.]

It behoves every man from time to time to survey the field of his labours, and to render an account to himself of the work he has accomplished, and of the tasks which still await him, in order that he may perceive whether the means employed hitherto are commensurate with the magnitude of his undertaking, and likely to lead up to the desired results.

Such a survey of the "Field of Geography" I propose to make the subject of my address to-day. You are aware that this field is a large one; that its boundaries are defined no more precisely than are the boundaries of other fields of human research; and that the fellow-labourers who join us in its cultivation are not always agreed as to the tasks that are peculiarly their own, or as to the methods in accordance with which their work should be carried on. By some of our neighbours we have not infrequently been accused of encroachments, and of overstepping our legitimate boundaries in order to invade adjoining fields already in the occupation of others, who are not only willing to cultivate them, but even claim to be better qualified than we are. There is undoubtedly some truth in this reproach, for, although there have been, and perhaps still are, geographers who would limit their task to a mere description of the earth's surface, there are others, to judge them by there performances, to whom earth and universe, geography and cosmography, are synonymous terms.

If, as a lexicographer, I were merely called upon to define the literal meaning of the word geography, I should content myself by saying that it meant a description of the earth. This, however, is merely the translation of a name given to our department of knowledge in an age when all natural science was descriptive, and scientific inquirers were still content to collect facts, without attempting to reduce them to a system. The ancient name, however, has been retained, notwithstanding that our conception of the duties of the geographer has undergone a notable change. The German word "Erdkunde," although too comprehensive, would perhaps be preferable, but could be rendered only by the word "geology," a term already appropriated to quite a distinct department of science, which has much in common with geography, and may even be described as its offspring, but is more certainly not identical with it.

Very varied have been the views as to what geography should embrace. Whilst Ptolemy would confine the duties of the geographer to the production of a correct map of the earth's surface, others fell into the opposite extreme, and were unable to resist the temptation of embellishing their "systems of geography" with historical excursions, and with information of the most varied kind, only remotely, if at all, connected with their subject. But, whilst the geographer should guard, on the one hand, against being drawn away from his legitimate task, he should not, on the other, allow himself to be intimidated by those who, on the pretence of creating a geographical "science," would frighten him away from fields of research which his training enables him to cultivate to greater advantage than can be done by representatives of other departments of knowledge.

But, whatever changes may have taken place respecting the aims of the geographer, it is very generally acknowledged that the portraiture of the earth's surface in the shape of a map lies within his proper and immediate domain. And there can be no doubt that a map possesses unique facilities for recording the fundamental facts of geographical knowledge, and that with a clearness and perspicuity not attainable by any other method. You will not, therefore, think it strange if I deal at considerable length with the development of cartography, more especially as my own labours have in a large measure been devoted to that department of geographical work. An inspection of the interesting collection of maps of all ages which I am able to place before you will serve to illustrate what I am about to say on this subject.

You may take it for granted that maps have existed from the very earliest times. We can hardly conceive of Joshua dividing the Promised Land among the twelve tribes, and minutely describing their respective boundaries, without the assistance of a map. The surveyors and land-measurers of the civilised states of antiquity undoubtedly produced cadastral and engineering plans, which answered every practical requirement, notwithstanding that their instruments were of the simplest. This is proved by a plan of Rome, the only document of the kind which has survived, at least in fragments, to the present time. It is engraved on slabs of marble on a scale of 1 : 3000, and was originally fixed against the wall of a Roman Town Hall, so that it might be conveniently consulted by the citizens.

Of the existence of earlier maps of the world, or even of provinces, we possess only a fragmentary knowledge. Anaximander of Miletus (634-546 B.C.) is credited among the Greeks with having produced the first map. His countryman Hecataeus the Elder, who had seen many lands, and of whom Herodotus borrowed the terse saying that Egypt was the gift of the Nile, about 500 years before Christ, exhibited to his fellow-citizens a brazen tablet upon which was engraved "a map of the entire circuit of the world, with all its seas and rivers," and pointed out to them the vast extent of the Empire of Darius, with whom they were about to engage in hostilities. But his warning proved in vain, and their disregard of the teachings of geography had, as usual, to be dearly paid for.

That maps grew popular at an early age is proved by Aristophanes, who, in his comedy of "The Clouds," 423 B.C., has a map of the world brought upon the stage by a disciple of the Sophists, who points out upon it the position of Athens and of other places familiar to the audience.

A real advance in cartography was made when Dicæarch of Messena (390-290 B.C.) introduced the parallel of Rhodes, as a separator between the northern and the southern habitable worlds. This "Diaphragm" was intersected at right angles by parallel lines representing meridians. This system of graduating a map was accepted by Eratosthenes (276-196 B.C.), and appears to have kept its hold upon the more scientific cartographers up to the time of Marinus of Tyre, the immediate predecessor of Ptolemy, who lived in the first century of the Christian era. Whether the map of the Roman Empire, which Agrippa, the son-in-law of Augustus, caused to be placed under a portico, and which was based upon itinerary surveys begun forty-four years before Christ, was furnished with parallels and meridians we do not know. It probably resembled in appearance some of our mediæval maps, like that of Richard of Haldingham, still preserved in the cathedral of Hereford. Widely different from it were the road-maps or "Itineraria picta" of the Romans, of which "Peutinger's Table" is a well-known example of a late date.

Such, then, were the maps which existed when Ptolemy of Alexandria appeared upon the field, and introduced reforms into the methods of representing the earth's surface which fully entitled him to the foremost place among ancient cartographers, and which inspired his successors when the study of science revived in the fifteenth century.

Ptolemy, like all great reformers, stood upon the shoulders of the men who had preceded him, for before a map like his could be produced, much preliminary work had been accomplished. Parmenides of Elea (460 B.C.) had demonstrated that our earth was a globe, and Eratosthenes (276-196 B.C.) had approximately determined its size. Hipparchus (190-120), the greatest astronomer of antiquity, the discoverer of the precession of the equinoxes, and the author of a catalogue of stars, had transferred to our earth the auxiliary lines drawn by him across the heavens. He had taught cartographers to lay down places according to their latitude and longitude, and how to project a sphere upon a plane. It is to him we are indebted for the stereographic and orthographic projections of the sphere. Ptolemy himself invented the tangential conical projection.

The gnomon, or sun-dial, an instrument known to the Chinese 600 years before Christ, had long been used for the determination of latitudes, and the results were relatively correct, although uniformly subject to an error of 16 minutes, which was due to the observers taking the altitude of the upper limb of the sun, when measuring the shadow case by their dial, instead of that of the sun's centre.

It was known, likewise, that differences of longitude could be determined by the simultaneous observation of eclipses of the sun or moon, or of occultations of stars, and Hipparchus actually calculated Ephemerides for six years in advance to facilitate computations. Ptolemy himself suggested the use of lunar distances. But so imperfect were the astrolabes and other instruments used by the ancient astronomers, and especially their time-keepers, that precise results are quite out of the question.

Ptolemy, in fact, contented himself with accepting eight latitudes determined by actual observation, of which four were in Egypt, whilst of the three longitudes known to him he only utilised one in the construction of his map. Unfortunately, the one selected proved the least accurate, being erroneous to the extent of 32 per cent, whilst the error of the two which he rejected did not exceed 13 per cent.* This want of judgment—pardonable, no doubt, under the circumstances—vitiated Ptolemy's delineation of the Mediterranean to a most deplorable extent, far more so than did his assumption that a degree only measured five hundred stades, when in reality it measured six hundred. For whilst the breadth of his Mediterranean, being dependent upon the relatively correct latitudes of Alexandria, Rhodes, Rome, and Massilia, fairly approximates the truth, its length is exaggerated to the extent of nearly 50 per cent, measuring 62° instead of 41° 40′. This capital error of Ptolemy is due therefore to the unfortunate acceptance of an incorrect longitude, quite as much as to an exaggeration of itinerary distances. It is probable that Ptolemy would have presented us with a fairer likeness of our great inland sea had he rejected observed latitudes and longitudes altogether and trusted exclusively to his itineraries and to such bearings as the mariners of the period could have supplied him with.

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* The three longitudes are the following:—

	Result of ancient observations.	Adopted by Ptolemy.	Actual difference of longitude.
Arbela	45° E. of Carthage	45°	34°
Babylon	12° 30′ E. of Alexandria	18° 30′	14° 18′
Rome	20° E. of Alexandria	23° 50′	17° 24′

No copy of Ptolemy's original set of maps has reached us, for the maps drawn by Agathodæmon in the fifth century are, under the most favourable circumstances, merely reductions of Ptolemy's originals, or they are compiled from Ptolemy's "Geography," which, apart from a few explanatory chapters, consists almost wholly of lists of places, with their latitudes and longitudes. I am almost inclined to adopt the latter view, firstly, because of the very crude delineation of Egypt, for which country an accurate cadastral survey was available; and secondly, on account of the cylindrical projection on which these maps are drawn, although from Ptolemy's own statements we are justified in believing that he made use of a conical projection in the construction of his maps.

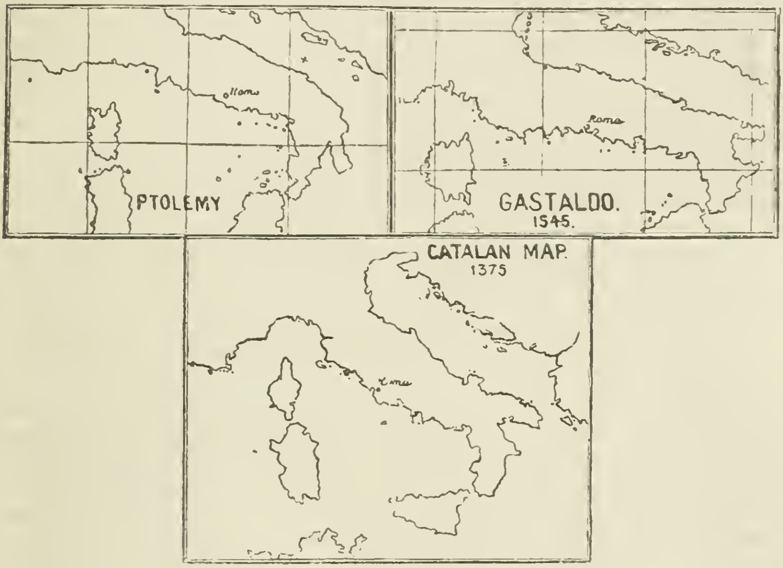
An examination of Ptolemy's maps shows very clearly that they were almost wholly compiled from itineraries the greater number of which their author borrowed from his predecessor Marinus. It shows, too, that Ptolemy's critical acumen as a compiler cannot be rated very high, and that he failed to utilise much information of a geographical nature which was available in his day. His great merit consisted in having taught cartographers to construct their maps according to a scientific method. This lesson, however, they were slow to learn, and centuries elapsed before they once more advanced along the only correct path which Ptolemy had been the first to tread.

During the "Dark Ages" which followed the dismemberment of the Roman Empire there was no lack of maps, but they were utterly worthless from a scientific point of view. The achievements of the ancients were ignored, and the principal aim of the map-makers of the period appears to have been to reconcile their handiwork with the orthodox interpretation of the Holy Scriptures. Hence those numerous "wheel maps," upon which Jerusalem is made to represent the hub, whilst the western half of the disc is assigned to Europe and Africa, and the eastern to Asia.

As it is not my intention to introduce you to the archæological curiosities of an uncritical age, but to give you some idea of the progress of cartography, I at once pass on to the Arabs.

The Arabs were great as travellers, greater still as astronomers, but contemptible as cartographers. Their astronomers, fully possessed of the knowledge of Ptolemy, discovered the error of the gnomon, they improved the instruments which they had inherited from the ancients, and carefully fixed the latitudes of quite a number of places. Zarkala, the Director of the Observatory of Toledo, even attempted to determine the difference of longitude between that place and Bagdad; and if his result differed to the extent of three degrees from the truth, it nevertheless proved a great advance upon Ptolemy, whose map exhibits an error amounting to eighteen degrees. Had there existed a scientific cartographer among the Arabs, he would have been able, with the aid of these observations and of the estimates of distances made by careful observers like Abul Hasan, to effect most material corrections in the map of the known world. If Edrisi's map (1154) is better than that of others of his Arab contemporaries, this is simply due to his residence at Palermo, where he was able to avail himself of the knowledge of the Italians.

Quite a new epoch in the history of cartography begins with the introduction of the magnetic needle into Europe. Hitherto the seaman had governed his course by the observation of the heavens; thenceforth an instrument was placed in his hands which made him independent of the state of the sky. The property of the magnet, or "loadstone," to point to the north first became known in Europe in the eleventh century, and in the time of Alexander Neckam (1185) it was already poised upon a pivot. It was, however, only after Flavio Gioja of Amalfi (1302) had attached to it a compass-card, exhibiting the direction of the winds, that it became of such immediate importance to the mariner. It is only natural that the Italians, who were the foremost seamen of that age, should have been the first to avail themselves of this new help to navigation. At quite an early date, as early probably as the twelfth century, they made use of it for their maritime surveys, and in course of time they produced a series of charts upon which the coasts frequented by them, from the recesses of the Black Sea to the mouth of the Rhine, are delineated for the first time with surprising fidelity to nature. The appearance of these so-called compass-charts, with gaily coloured roses of the winds and a bewildering number of rhumb-lines, is quite unmistakable. A little consideration will show you that if the variation of the compass had been taken into account in the construction of these charts, they would actually have developed into a picture of the world on Mercator's projection. But to deny them all scientific value, because they do not fulfil this condition, is going too far. As correct delineations of the contours of the land they were a great advance upon Ptolemy's maps, and it redounds little to the credit of the "learned" geographers of a later time that they rejected the information so laboriously collected and skilfully combined by the chart makers, and returned to the deformities of Ptolemy. The adjustment of these charts to positions ascertained by astronomical observations could have been easily effected. An inspection of my diagrams will prove this to you. The delineation of Italy, on the so-called Catalan map, is surprisingly correct; whilst Gastaldo, whose map of Italy is nearly two hundred years later, had not yet been able to emancipate himself from the overpowering authority of Ptolemy. And in this he did not sin alone, for Italian and other cartographers of a much later time still clung pertinaciously to the same error.



There were others, however, who recognised the value of these charts, and embodied them in maps of the entire world. Among such were Marino Sanute

(1320) and Fra Mauro (1453), both of whom made their maps the repository of much information gathered from the Arabs or from their own countrymen who had seen foreign parts. Fra Mauro, more especially, has transmitted to us a picture of Abyssinia marvellously correct in its details, though grossly exaggerated in its dimensions.

Another step in the right direction was taken when the cartographers and pilots of Portugal and Spain returned to the crude projection of Dicæarch, Eratosthenes, and Marinus, which enabled them to lay down places according to latitude and longitude upon their "plane charts."

Germany, debarred from taking a share in the great maritime discoveries of the age, indirectly contributed to their success by improvements in mathematical geography and the introduction of superior instruments. The navigators of the Early Middle Ages still made use of an astrolable when they desired to determine a latitude, but this instrument, which in the hands of an expert observer furnished excellent results on land, was of little use to a pilot stationed on the unsteady deck of a vessel. Regiomontanus consequently conferred an immense service upon the mariners of his time when, in 1471, he adapted to their use an instrument already known to the ordinary surveyors. It was this cross staff which Martin Behaim introduced into the Portuguese navy, and which quickly made its way among the navigators of all countries. Most observations at sea were made with this simple instrument, variously modified in the course of ages, until it was superseded by Hadley's sextant. In the hands of the more skilful navigators of the seventeenth century, such as Baffin, James, and Tasman, the results obtained with the cross-staff were correct within two or three minutes.

Far greater difficulties were experienced in the observations of longitudes. Lunar eclipses were most generally made use of, but neither the Ephemerides of Regiomontanus, for the years 1474 to 1506, which Columbus carried with him on his voyages, nor those of Peter Apianus, for 1521-70, were sufficiently accurate to admit of satisfactory results, even though the actual observation left nothing to be desired. Errors of 30 degrees in longitude were by no means rare, and it was only when Kepler had published his "Rudolphine Tables" (1626), which, according to Lalande, formed the basis of all astronomical calculations during a century, that more exact results were obtained. The suggestion to determine longitude by means of lunar distances or occultations of stars bore no fruit at that time, as the knowledge of the complicated motion of the moon was still very imperfect. Still less was known about the movements of the satellites of Jupiter which Galileo had first espied in 1610 when looking at that planet through his telescope. They became available only after tables of their revolutions and eclipses had been published by Cassini in 1668.

Another suggestion for the determination of longitude was made by Gemma Frisius in 1530, namely, that a clock or timekeeper should be employed for the purpose. One of Huygens's pendulum clocks was actually carried by Holmes to the Gulf of Guinea, but the results obtained were far from encouraging.

The difficulties which still attended the determination of longitude in the sixteenth century are conspicuously illustrated by the abortive attempts of a Congress of Spanish and Portuguese navigators who met at Badajoz and Yelves in 1524 for the purpose of laying down the boundary line, which Pope Alexander VI. had drawn at a distance of 370 Spanish leagues to the west of Cape Verde Islands, to separate the dominions of Spain from those of Portugal. Not being able to agree either as to the length of a degree, or even as to that of a league, they separated without settling the question placed before them.

So uncertain were the results of observations for longitude made during the sixteenth and seventeenth centuries that it was thought advisable to trust to the results of dead-reckoning rather than to those of celestial observations. But the method of dead-reckoning is available only when we have a knowledge of the size of the earth, and this knowledge was still very imperfect, notwithstanding the renewed measurement of an arc ot the meridian by Snellius, the Dutch mathematician (1615). This measurement, however, is remarkable on account of its having for the first time applied the exact method of triangulation to a survey.

The problem of measuring the ship's way had been attempted by the Romans, who dragged paddle-wheels behind their ships, the revolutions of which enabled them to estimate the distance which the ship had travelled. But time, the strength of wind, and the pilot's knowledge of the qualities of his ship, still constituted the principle elements for calculations of this kind, for the "catena a poppa" which Magellan attached to the stern of his ship was merely intended to indicate the ship's leeway and not the distance which it had travelled. The log, which for the first time enabled the mariner to carry out his dead-reckoning with confidence, is first described in Bourne's "Regiment for the Sea," which was published in 1577.

The eminent position which Italian cartographers occupied during the fourteenth and fifteenth centuries had to be surrendered by them, in the beginning of the sixteenth, to their pupils, the Portuguese and Spaniards, upon whom extensive voyages and discoveries had conferred exceptional advantages. These, in turn, had to yield to the Germans, and later on to the Dutch, who were specifically qualified to become the reformers of cartography by their study of mathematics and of the ancient geographers, as also by the high degree of perfection which the arts of engraving on wood and copper had attained among them. German mathematicians first ventured to introduce the long-neglected geographical projections of Hipparchus and Ptolemy, and devised others of their own. Werner of Nürnberg (1514) invented an equivalent heart-shaped projection, whilst both Apianus and Staben (1520 and 1522) suggested equivalent projections. Still greater were the services of Gerhard Cremer, or Mercator (1512-94), the Ptolemy of the sixteenth century, who not only introduced the secant conical projection, but also invented that still known by his name, which was calculated to render such great service to the navigator, but was nevertheless not universally accepted until the middle of the fifteenth century, when the mediæval compass and plane charts finally disappeared.

The German cartographers of that age are to be commended not because they copied Ptolemy's maps—for in this they had been preceded by others—but because they adopted his scientific methods in producing maps of their own. Their reforms began at home, as all reforms should. They were amply supported in their efforts by the many astronomers of note of whom Germany then boasted, and by quite a staff of local "geographers," of whom nearly every district of the empire boasted the possession of one. Among these local maps, that of Bavaria, by Philipp Bienewitz, or Apianus (1566), holds a distinguished place, for it is the first map on a large scale (1 : 144,000) based upon a regular survey. Its errors in latitude do not exceed 1′, and those in longitude 3′, which is marvellously correct considering the age of its production. Like most maps of the period, it is engraved on wood, for though the art of engraving on copper was invented in Germany before 1446, and the first map was engraved there in 1450, copper engraving only became general at a much later date.

Perhaps the earliest general map of Germany, and certainly one of the most interesting, was that which the famous Cardinal Nicolas of Cues or Cusa completed in 1464, the only existing copy of which is to be found in the British Museum, where it was "discovered" by Baron Nordenskjöld. Mercator's map of Germany, published more than a century after that of the learned Cardinal (in 1585), was naturally far more complete in all respects, and was certainly far superior to the maps of any other country existing at that time. This fact is brought home to us by an inspection of a collection of maps to be found in the well-known Theatrum Orbis of Ortelius (first published in 1570), where we may see that the maps, supplied by Humphrey Lloyd and other British cartographers are still without degree lines.

But, when we follow Mercator, or, in fact, any other cartographer of the period, into regions, the successful delineation of which depended upon an intelligent interpretation of itineraries and of other information collected by travellers, they are found to fail utterly. Nowhere is this utter absence of the critical faculty more glaringly exhibited than in the maps of Africa of that period.

Among the Dutch cartographers of that age one of the foremost places must be accorded to Waghenaer of Enkhuizen, whose "Mirror of the Sea," a collection of charts published in 1583, enjoyed a considerable reputation among British seamen. Other famous Dutch publishers of charts were Ortelius, Janssen, Blaeuw, and Vischer, who accumulated large stocks of copper plates, which constituted valuable heirlooms, and, not unlike the plates of certain modern map publishers, supplied edition after edition without undergoing any change, except perhaps that of the date.

The age of great discoveries was past. All blanks upon our maps had not yet been filled up, but the contours of the great continents stood out distinctly, and in the main correctly. Discoveries on a large scale had become impossible, except in the polar regions and in the interior of some of the continents; but greater preciseness had to be given to the work already done, and many details remained to be filled in. In this "Age of Measurements," as Peschel significantly calls it, better instruments, and methods of observation superior to those which had sufficed hitherto, were needed, and were readily forthcoming.

Picard, by making use of the telescope in measuring angles (1667), obtained results of a degree of accuracy formerly quite unattainable, even with instruments of huge proportions. For the theodolite, that most generally useful surveying instrument, we are indebted to Jonathan Sission (1737 or earlier). More important still, at all events to the mariner, was the invention of the sextant, generally ascribed to Hadley (1731), but in reality due to the genius of Newton. Equally important was the production of a trustworthy chronometer by John Harrison (1761), which first made possible the determination of meridian distances, and is invaluable whenever a correct knowledge of the time is required. One other instrument, quite recently added to the apparatus of the surveyor, is the photographic camera converted for his especial benefit into a photogrammeter. This instrument can perhaps never be utilised for ascertaining the relative positions of celestial bodies, but has already done excellent service in ordinary surveying, especially when it is required to portray the sides of inaccessible mountains.

But the full fruits of these inventions could be enjoyed only after Bradley had discovered the aberration of light (1728) and the nutation of the earth's axis (1747); Domenique Cassini had furnished trustworthy tables of the refraction of light; and the complicated movement of the moon had been computed by Euler (1746), Tobias Mayer (1753), Bradley (1770), and more recently by Hansen.

Positively novel methods for determining the latitude and longitude of a place can scarcely be said to have been proposed during this period, but many of the older methods only became really available after the improvements in the instruments indicated above had taken place, and the computations had been freed from the errors which vitiated them formerly.

Real progress, however, has been made in the determination of altitudes. Formerly they could be ascertained only by trigonometrical measurement, or by a laborious process of levelling, but since physicists have shown how the decrease of atmospheric pressure with the altitude, and the boiling-point of water depending upon this decrease, afforded a ready means of determining heights, the barometer, aneroid, and boiling-point thermometer have become the indispensable companions of the explorer, and our knowledge of the relief of the land has advanced rapidly.

Equally rapid have been the improvements in our instruments for measuring the depth of the ocean, since a knowledge of the configuration of its bed was demanded by the practical requirements of the telegraph engineers.

And in proportion as the labours of the surveyors and explorers gained in preciseness, so did the cartographer of the age succeed in presenting the results achieved in a manner far more satisfactory than had been done by his predecessors. His task was comparatively easy so long as he only dealt with horizontal dimensions, though even in the representation of these a certain amount of skill and judgment is required to make each feature tell in proportion to its relative importance. The delineation of the inequalities of the earth's surface, however, presented far greater difficulties. The mole-hills, or serrated ridges, which had not yet quite disappeared from our maps in the beginning of this century, failed altogether in doing justice to our actual knowledge. The first timid attempt to represent hills as seen from a bird's-eye view, and of shading them according to the steepness of their slopes, appear on a map of the Breisgau, published by Homann in 1718. We find this system fully developed on La Condamine's map of Quito, published in 1751, and it was subsequently popularised by Arrowsmith. In this crude system of hill shading, however, everything was left to the judgment of the draughtsman, and only after Lehmann (1783) had superimposed it upon a groundwork of contours, and had regulated the strength of the hatching in accordance with the degree of declivity to be represented did it become capable of conveying a correct idea of the configuration of the ground.

The first to fully recognise the great importance of contours was Philip Buache, who had prepared a contoured map of the Channel in 1737, and suggested that the same system might profitably be extended to a delineation of the relief of the land; and this idea, subsequently taken up by Ducarla of Vabres, was for the first time carried into practice by Dupain-Triel, who published a contoured map of France in 1791. Up to the present time more than eighty methods of showing the hills have been advocated, but it may safely be asserted that none of these methods can be mathematically correct, unless it is based upon horizontal contours.

The credit of having done most towards the promotion of cartography in the course of the eighteenth century belongs to France. It was France which first equipped expeditions to determine the size of the earth; France which produced the first topographical map based upon scientific survey — a work begun by César François Cassini in 1744, and completed by his son five years after his father's death; it was France again which gave birth to D'Anville, the first critical cartographer whom the world had ever seen.

Delisle (1675-1726), a pupil of Cassini's, had already been able to rectify the maps of the period by utilising the many astronomical observations which French travellers had brought home from all parts of the world. This work of reform was carried further by D'Anville (1697-1782), who swept away the fanciful lakes from off the face of Africa, thus forcibly bringing home to us the poverty of our knowledge; who boldly refused to believe in the existence of an Antarctic continent covering half the southern hemisphere, and always brought sound judgment to bear upon the materials which the ever-increasing number of travellers placed at his disposal. And whilst France led the way, England did not lag far behind.

In this country the discoveries of Cook and of other famous navigators, and the spread of British power in India, gave the first impulse to a more diligent cultivation of the art of representing the surface of the earth on maps. There, to a greater extent than on the Continent, the necessities of the navigator called into existence a vast number of charts, amongst which are many hundreds of sheets published by Dalrymple and Joseph Desbarres (1776). Faden, one of the most prolific publishers of maps, won distinction especially for his country maps, several of which, like that of Surrey, by Linley and Gardener, are based upon trigonometrical surveys carried on by private individuals. England was the first to follow the lead of France in undertaking a regular topographical survey (1785). Nor did she lack critical cartographers. James Rennell (b. 1742) sagaciously arranged the vast mass of important information collected by British travellers in India and Africa; but it is chiefly the name of Aaron Arrowsmith (died 1823) with which the glory of the older school of English cartographers is most intimately connected. Arrowsmith became the founder of a family of geographers, whose representative in the third generation, up to the date of his death in 1873, worthily upheld the ancient reputation of the family. Another name which deserves to be gratefully remembered is that of John Walker, to whom the charts published by our Admiralty are indebted for that perspicuous, firm, and yet artistic execution, which, whilst it enhances their scientific value, also facilitates their use by the mariner.

Since the beginning of the present century Germany has once more become the headquarters of scientific cartography; and this is due as much to the inspiriting teachings of a Ritter and a Humboldt as to the general culture and scientific training, combined with technical skill, commanded by the men who more especially devoted themselves to this branch of geography, which elsewhere was too frequently allowed to fall into the hands of mere mechanics. Men like Berghaus, Henry Kiepert, and Petermann, the best-known pupil of the first of these, must always occuy a foremost place in the history of our department of knowledge. Berghaus, who may be truly described as the founder of the modern school of cartography, and who worked under the immediate inspiration of a Ritter and a Humboldt, presented us with the first comprehensive collection of physical maps (1837). Single maps of this kind had, no doubt, been published before—Kircher (1665) had produced a map of the ocean currents, Edmund Halley (1686) had embodied the results of his own researches in maps of the winds and of the variation of the compass (1606), whilst Ritter himself had compiled a set of physical maps (1806)—but no work of the magnitude of Berghaus's famous Physical Atlas had seen the light before. Nor could it have been published even then had it not been for the unstinted support of a firm like that of Justus Perthes, already the publisher of Stieler's Atlas (1817-23), and subsequently of many other works which have carried its fame into every quarter of the globe.

And now, at the close of this nineteenth century, we may fairly boast that the combined science and skill of surveyors and cartographers, aided as they are by the great advance of the graphic arts, are fully equal to the production of a map which shall be a faithful image of the earth's surface. Let us imagine for one moment that an ideal map of this kind were before us, a map exhibiting not merely the features of the land and the depth of the sea, but also the extent of forests and of pasture-lands, the distribution of human habitations, and all those features the representation of which has become familiar to us through physical and statistical atlases. Let us then analyse the vast mass of facts thus placed before us, and we shall find that they form quite naturally two well-defined divisions—namely, those of physical and political geography, whilst the third department of our science, mathematical geography, deals with the measurement and survey of our earth, the ultimate outcome of which is the production of a perfect map.

I shall abstain from giving a laboured definition of what I consider geography should embrace, for definitions of this kind help practical workers but little, and will never deter anyone who feels disposed and capable from straying into fields which an abuse of logic has clearly demonstrated to lie outside his proper domain. But I wish to enforce the fact that topography and chorography, the description of particular places or of entire countries, should always be looked upon as integral portions of geographical research. It is they which furnish many of the blocks needed to rear our geographical edifice, and which constitute the best training school for the education of practical geographers, as distinguished from mere theorists.

That our maps, however elaborate, should be supplemented by descriptions will not even be gainsaid by those who are most reluctant to grant us our independent existence among the sciences which deal with the earth and its inhabitants. This concession, however, can never content us. We cannot allow ourselves to be reduced to the position of mere collectors of facts. We claim the right to discuss ourselves the facts we have collected, to analyse them, to generalise from them, and to trace the correlations between cause and effect. It is thus that geography becomes comparative ; and whilst comparative physical geography, or morphology, seeks to explain the origin of the existing surface features of our earth, comparative political geography, or anthropo-geography, as it is called by Dr. Ratzel, one of the most gifted representatives of geographical science in Germany, deals with man in relation to the geographical conditions which influence him. It is this department of geography which was so fruitfully cultivated by Karl Ritter.

Man is indeed in a large measure "the creature of his environment," for who can doubt for a moment that geographical conditions have largely influenced the destinies of nations, have directed the builders of our towns, determined the paths of migrations and the march of armies, and have impressed their stamp even upon the character of those who have been subjected to them for a sufficiently extended period ?

The sterile soil of Norway, bordering upon a sea rich in fish, converted the Norwegians first into fishermen, and then into the bold mariners who ravaged the shores of Western Europe and of the Mediterranean, and first dared to cross the broad waves of the Atlantic. Can it be doubted that the uniformly broad plains of Eastern Europe contributed largely to the growth of an empire like that of Russia, stretching from the Arctic to the Black Sea ; or that the more varied configuration of Western and Southern Europe promoted the development of distinct nationalities, each having a history of its own, and presenting individual traits which characteristically mark it off from its neighbours ?

The intelligent political geographer cannot contemplate the great river systems of the continents without becoming aware that their influence has been very diverse, and is not solely dependent upon size or volume. The rivers of Siberia, ice-bound during the greater part of the year, run to waste into an inhospitable ocean, which even our modern resource of steam has failed to render really accessible. They contrast very unfavourably, notwithstanding their huge size, with the far smaller rivers of Northern Europe, which open freely into the sea and afford navigable highways into the very heart of the continent. And these European rivers, fed as they are by rains falling in all seasons, and by the ice stored up in the recesses of the Alps, again differ very widely in their character from the rivers of tropical regions, dependent upon an intermittent supply of rain. Again, who can look upon such mighty rivers as the Amazon and Mississippi without becoming conscious of the fact that they have given geographical unity to regions of vast extent, which, had their drainage been different, would have presented all the variety which we meet with in Europe—a variety which has proved so favourable to the progress of human culture and civilisation?

It is an old remark that climatic conditions exercise a most powerful influence upon man, and that the development of countries, where Nature yields the necessaries of life without requiring a serious effort on the part of the inhabitants, has been very different from those whose climatic conditions compel the putting forth of a certain amount of well-directed energy to make life bearable, or even possible.

These instances of the dependence of human development upon natural resources and geographical features might be multiplied, and their study must at all times be profitable and instructive. It must not, however, be assumed for one moment that this dependence of man upon Nature is absolute. The natural resources of a country require for their full development a people of energy and capacity; and instances in which they have been allowed to lie dormant, or have been wasted, are numerous. What were America and Australia, as long as they remained only the homes of the wandering savages who originally inhabited them; and what has becomes of certain countries in the East, at one time among the most flourishing regions of the earth, but presenting now a most deplorable picture of exhaustion and decay? The geographer must not shut his eyes to the fact that the existing state of affairs is not merely the outcome of given geographical conditions and natural resources, but has in a large measure been brought about by man's conquests over the forces of Nature. We do not exaggerate, for instance, when we assert that the introduction of steam as a motive force has largely changed the geographical relations of countries. By facilitating intercourse between distant regions, and encouraging travel, it has tended to uniformity among nations, and rendered available for the common good resources which otherwise must have lain fallow. A tunnel, such as that under the Saint Gotthard, may not have "abolished" the Alps, but it certainly has brought the populations who occupy their opposite slopes nearer to each other, and has given a new direction to commerce.

Perhaps one of the most instructive illustrations of the complex human agencies which tend to modify the relative importance of geographical conditions is presented to us by the Mediterranean. The time when this inland sea was the centre of civilisation and of the world's commerce, whilst the shores of Western Europe were only occasionally visited by venturesome navigators or conquering Roman hosts, does not lie so very far behind us. England, at that period, turned her face towards Continental Europe, of which it was a mere dependency. The prosperity of the Mediterranean countries survived far into the Middle Ages, and Italy at one time enjoyed the enviable position of being the great distributor of the products of the East, which found their way across the Alps into Germany, and through the gates of Gibraltar to the exterior ocean. But a change was brought about, partly through the closing of the old Oriental trade routes, consequent upon the conquests of the Turks, partly through the discovery of a new world and of a maritime highway to India. When Columbus, himself an Italian, returned from the West Indies in 1493, and Vasco da Gama brought the first cargo of spices from India in 1499, the star of Italy began to fade. And whilst the spices of the Indies and the gold of Guinea poured wealth into the lap of Portugal, and Spain grew opulent on the silver mines of Mexico and Peru, Venice was vainly beseeching the Sultan to re-open the old trade route through the Red Sea. The dominion of the sea had passed from Italy to Spain and Portugal, and passed latter on to the Dutch and English. But mark how the great geographical discoveries of that age affected the relative geographical position of England! England no longer lay on the skirts of the inhabited world, it had become its very centre. And this natural advantage was enhanced by the colonial policies of Spain and Portugal, who exhausted their strength in a task far beyond their powers, took possession of tropical countries only, and abandoned to England the less attractive but in reality far more valuable regions of North America. England was thus enabled to become the founder of real colonies, the mother of nations; and her language, customs, and political institutions found a home in a new world.

And now, when the old highway through the Red Sea has been re-opened, when the wealth flowing through the Canal of Suez is beginning to revivify the commerce of Italy, England may comfort herself with the thought that in her own colonies and in the States which have sprung up across the Atlantic, she may find ample compensation for any possible loss that may accrue to her through geographical advantages being once more allowed to have full play.

I am afraid I have unduly tried your patience. I believe you will agree with me that no single individual can be expected to master all those departments which are embraced within the wide field of geography. Even the master-mind of a Humboldt fell short of this, and facts have accumulated since his time at an appalling rate. All that can be expected of our modern geographer is that he should command a comprehensive general view of his field, and that he should devote his energies and capacities to the thorough cultivation of one or more departments that lie within it.

Antarctic Exploration: The Proposed Expedition.—A meeting of the Royal Geographical Society of Australasia was held in Melbourne on 4th of July, 1891, for the purpose of hearing a report from the committee of the society which had been appointed to deal with the question of the Swedish-Australian Antarctic exploration. Mr. G. S. Griffiths moved the adoption of the report. The committee during the last quarter had not lost any opportunity which had offered itself for the furtherance of the expedition they were endeavouring to arrange. It was due to Baron von Muller to say that it was owing to his indomitable energy that such a grand donation hsd been promised by Sir Thomas Elder. Baron von Muller wrote to Sir Thomas Elder, asking him if he would give £5,000 towards the exploration as Baron Dickson had done in Sweden, and the answer came back that he would. Captain Pasco and his colleague had also done well in Sydney in furtherance of the movement, and it was greatly due to their influence that £1,000 had been put on the Queensland Estimates to help the expedition, and that Sir Henry Parkes, the Premier of New South Wales, had promised that £1,366 would be placed on the Estimates in that colony, while the public would subscribe £634. The society were also in hopes of obtaining a sum from Western Australia, the Premier having promised that he would place one on the Estimates there. The promises now amounted to nearly £14 000—namely Baron Dickson £5,000, Sir Thomas Elder £5,000, Mr. R. Reid £1,000, the Queensland Government £1,000, the Tasmanian Government £300, and sundry donations £1,600. The sum of £15,000 had been mentioned as required for the exploration, but the society were of opinion that another £1,000 should be obtained. They wanted to place on the exploring ships one or two men of high scientific attainments, who were anxious to go with it, and who would do very valuable work if they did go. It would therefore be seen that about £2,000 more was required, in order that everything necessary should be provided, and the committee felt satisfied they would have no difficulty in obtaining it during the next month or two. Professor Kernot said that the parts to be explored could be easily reached by steamer, and vessels would leave in about twelve or fifteen months, spend a summer in the Southern Ocean, and return to Melbourne by March or April of 1893.

NEW MAP FOR TEACHING LOCAL GEOGRAPHY.

DESCRIPTION OF A CONTOUR MAP OF YORKSHIRE.

[Designed and drawn by Fred D. King, Bradford. Scale: ·46 inches to the mile. Printed and published by Mr. E. J. Arnold, Educational Publisher, 3, Briggate, Leeds.]

A COUNTY as large as any other two English counties; more than one-third the size of Switzerland, and more than half that of Belgium; with a population as great as that of the former country, and half as numerous as that of the latter;—a county, that, owing to its position and to its geological formation, presents so great a variety of surface, and affords scope for so many differing occupations; a county rich in its natural resources and in its acquired industries,—whether as connected with the sea, which washes its eastern borders, with agriculture and grazing, which are the staple industries of the county generally; or with mining and manufactures, which are the principal industries of the southern part of the West Riding;—a county, which, in the interest attaching to varied historical association, is second to none, such a county deserves respectful treatment at the hands of the cartographer, and in Mr. Arnold's latest map it receives its desserts.

In the philosophic study of such subjects as commerce, ethnology, language, and social habits, a knowledge of contour supplies a master-key to many of the problems that the student is called upon to solve. If Montenegro and Switzerland are independent States to-day, it may safely be affirmed that their peoples are as much indebted to their mountains as to their own personal valour for the liberty they enjoy; and whatever may be the energy of the Swiss or the Montenegrins, their hills would necessarily be fatal to a widely-extended commerce. The contour map of Yorkshire serves to illustrate this point. All the great commercial centres of the county, *e.g.*, Sheffield, Leeds, Bradford, Huddersfield, Hull, Middlesbrough, Halifax, and York are situated less than 300 feet above sea level, and some of them, *e.g.*, Hull, Middlesbrough, and York at less than 100 feet. On the other hand, even small towns of 5,000 inhabitants are "few and far between" at an altitude of 1,000 feet above sea level.

Again, as regards race, language, and social habits. The hills of Yorkshire sheltered a remnant of the Celtic tribes; the old Danish stock settled in the dales. From generation to generation they lived here. Down in the plains were the towns—the nerve-centres of civilisation. Through the plain ran the roads—the arteries of civilisation. Both were remote from hill and dale; so, while the inhabitant of the plain reflected in his daily life the virtues and the vices of a civilisation from whose influence he could not escape, the sturdy dalesman, cut off from a civilisation which was but half a blessing, reflected in his isolation the simpler manners, the sturdy physical frame, and the homely dialect of his forefathers.

The late Professor Phillips states, in his "Rivers of Yorkshire," that the hills of that county "naturally divide themselves into four parts." Let this statement be tested with an ordinary wall map, or even with a extraordinarily good one. Two systems of hills will probably be discerned; possibly three. The fourth will be sought in vain. But the contour map reveals it. In the northern portion of the Yorkshire

Pennines, Mickle Fell rises 2,591 feet above sea level; in the southern part, Black Hill, south of Holmfirth, rises to 1,909 feet. Almost midway between these elevations, south of the Craven Fault, and lying in the neighbourhood of Colne and Skipton, is a great depression, in some parts only 400 or 500 feet above sea level. Through this depression is carried the Leeds and Liverpool Canal; through it runs the easiest road between Lancashire and Yorkshire;—a road along which marched the Highland army under the Young Pretender in "The Forty Five." Thus the contour map teaches us that the Pennines in western Yorkshire form a northern and southern system, separated by the great depression round Skipton; that in eastern Yorkshire the North-York Moors are separated from the Wolds by the Vale of Pickering, and that the two eastern systems are separated from those on the west by the enormous longitudinal Plain of York. We thus get the four great hill-masses referred to by Professor Phillips.

We describe the Plain of York as "enormous," and so, surely, it is. But we only realise its extent by comparing it with the county as a whole, and it is by the aid of the contour-tint alone that we can do this. With this we see that its area is about one-third that of the entire county—that from the borders of Nottinghamshire to the Tees one could walk in a straight line for eighty miles and never reach an elevation of 200 feet.

For it is one of the advantages of the application of the contour principle to map-making that not only can the different elevations be distinctly indicated on the map—they are as accurately measured. Thus the size and direction of the plains, the elevation and general slope of the hills, and the shape of the valleys, all are seen at a glance in the contour map. So, equally, one sees why the old Roman road, the Ermin Street, should take the direction it does,—running from Doncaster, through Pontefract, Castleford, Aberford, and Boroughbridge to Catterick. The Roman engineers, in their progress north, were careful to keep as far as possible on the level, and, equally, to avoid giving an advantage to the Brigantes—the men of the hills—by exposing themselves to attack in situations where their heavily-armed legions could act with less effect against the more lightly-armed natives. The road in consequence keeps to the plain or skirts the hill throughout its entire length, and only in two or three instances does it rise to 200 feet above sea level.

In this map the whole of the county up to 200 feet is tinted a light green; from 200 to 500 feet the land is tinted a light buff; from 500 to 1,000 feet a darker buff is employed, and each succeeding 500 feet is distinguished by a darker shade, till, in the last level (2,500 to 3,000 feet), it becomes almost black. The final result is a picture that will dwell in the memory, and a plan that will stand the test of examination. The sea and rivers—as far as the tidal influence is felt—are tinted blue; the remainder of the rivers being printed black. The towns are represented by circles of areas proportionate to the number of inhabitants they contain. They are linked to each other by the principal roads, and by a complete system of railways, the latter being printed red, so as not to interfere with the general effect of the contour tints.

The portions of counties surrounding Yorkshire, and shown on the map, are not treated on the contour principle. The object of this has been to concentrate the attention on one county only, and so to prevent the dissipation of thought and energy that would in all probability follow had the whole area of the map been contoured. The surrounding counties have not, however, been neglected: a few of the principal towns, rivers, roads, and railways are shown, so that their relative positions and importance may be seen and compared, while the study of the map of Yorkshire is being prosecuted. It only remains to be added that the map is a careful reduction from the Ordnance Survey.

THE TEACHING OF COMMERCIAL GEOGRAPHY.

By Gwyn Morris.

Lecturer in Commercial Geography in the Commercial Department of the University College of South Wales and Monmouthshire.

[Paper read to the members in the Library, November 13th, 1891.]

In the definition of Technical Instruction set forth in the Act of 1889, it is stated "That technical instruction shall not include teaching the practise of any trade or industry or employment, but shall include instruction in the branches of science and art, with respect to which grants are for the time being made by the Department of Science and Art and any other form of instruction (including modern languages and commercial and agricultural subjects), which may for the time being be sanctioned by that department by a minute laid before Parliament, and made on the representation of a local authority that such a form of instruction is required by the circumstances of its district, consequently the passing of the Act now permits any local authority (although only by means of a parenthesis and as a matter of secondary import) to introduce the teaching of this the most important branch of the science of Geography into our scheme of national education, a position hitherto studiously denied it. It surely is a matter for no little gratification that the County Council of Cardiff was among the first, if not the first, to give effect to the provisions of the Act."

But in the matter of the effectual teaching of the subject the difficulties are very great. In our elementary schools the teaching of even general geography has either been utterly ignored or conducted on very unsatisfactory lines and by most irrational methods. The endless repetition of "a cape is a piece of land jutting out in the sea," or the repetition of the definitions of elementary mathematical geography, without any attempt being made to explain them is most distasteful, although we all know that with a little painstaking and methodical teaching these elementary principles may be made clear to very young children, and, consequently, these causes contribute to render what is and ought to be the most interesting of school subjects, the most distasteful alike to teacher and taught.

Even in our higher grade schools we find the subject does not receive adequate attention. For instance, I am informed that, in a higher grade school deservedly popular, the sum total of the geographical teaching sometime ago was confined to the Fourth Standard, which was the lowest class of the school, the other classes taking history as the alternative. Too often in schools of this description attention to the subject is confined to a very brave display of maps and charts which are more for ornament than use. The geographical readers now so much in use are undoubtedly very interesting and graphically written, but bear little upon the utilisation of the subject for practical after-life purposes.

I only advert to this unsatisfactory state of things, in order to bring before you what I consider the first point essential to the successful teaching of commercial geography under the provisions of the Act, viz. :—

That representations should be made to the Education Department with a view to causing the teaching of geography in our elementary and intermediate schools to be placed upon a distinct basis, designed to further as much as possible the subsequent successful study of what I venture to call technical geography. I venture to maintain that, until this reform be effected in the teaching of geography in our common schools, the work of the technical teacher will be much hampered by the ignorance of the general principles and common facts of the science now displayed so glaringly by youths and young men of all classes. A very amusing instance of this ignorance was brought to my notice only three weeks ago, which renders it all the more ludicrous, as the person in question had travelled a good deal.

A young Welshman, residing in Washington State, complained sometime ago to a friend of mine, also resident there, of his want of success and disgust at the Far West in general, and declared his intention of returning forthwith to Wales. My friend, who has already developed into a patriotic citizen, urged him rather to go East and settle in Pennsylvania, where, he informed him, he would find sufficient of his fellow-countrymen to make him feel at home. The Cymro, however, replied that Pennsylvania was a mere hole in the wall as compared with the Principality. He was then questioned as to the relative magnitude of these two states, and the prompt reply was, "Why Wales is twice as big as Pennsylvania!" Yet another instance. A distinguished professor at one of our University Colleges a few years ago asked his senior class, consisting of over a dozen members, who were reading for their B.A. degree as to where Manila was? Only one was able to answer. To resume. As Mr. Keltie maintains, the only way to master the application of geographical knowledge to the interests of commerce is to obtain a thorough knowledge of the great facts and principles of geography itself.

This consideration brings me to the second point suggested by the subject, viz., the text-books available and in use :—

The first thing that strikes one in this connection is the fact that in nearly all the text books as yet issued on this subject, due regard is paid to the elucidation of the great facts and principles of geography. This, of course, is a very desirable state of things, and, in fact, absolutely necessary, so long as the instruction given in our common schools in the rudiments of science is of such a bald and mechanical character.

But in proportion as this defect is remedied, in order to the teaching of the subject on a technical and practical basis, we conceive the possibility of omitting a good deal of what is general and physical in the study as having been already taught, and the writers of the text books of the future will be enabled to devote themselves almost entirely to the consideration of those principles, facts, and incidents, which mutually act and react, as between geography on the one side and commerce on the other.

As Mr. Keltie remarks—Then the writers will pay more attention to trade routes and their incidents, then the question as to hindrances and facilities for the transport of commercial products will be treated of in greater detail; then conditions affecting navigation and charges imposed on commerce, as, for example, in the case of the Suez Canal, how serious an item the canal dues are to the freighter engaged in the trade with the east; then the leading points of political economy might be discussed, customs, tariffs explained, and currencies exchanges, and even methods of book-keeping peculiar to countries receive much more attention than at present.

During a visit which I paid to the United States last summer, whilst McKinleyism was at its height, I was surprised to find with what intelligence and grasp of principles young men in shipowners' offices and business generally discussed the questions of Free Trade *v.* Protection, and with what skill they pleaded in favour of McKinley's legislation—a very different state of things, I fear, to what obtains among the corresponding classes in this country.

In the next place, we must have, in the language of the primary school, as much object teaching as possible.

In this connection I would respectfully suggest that the Royal Geographical Society is specially suited for promoting and carrying out this means of efficient instruction in technical geography. Fellows are scattered all over the world. Under instructions from the Council they would be able to collect the various commercial products of the countries in which they severally reside, and supply all particulars as to modes of production and conditions affecting the same.

These specimens, collected together by the society, could be so arranged and distributed, with possible State assistance, as to place in the technical teacher's hands the best means of instructing his pupils in the purely technological branch of commercial geography. Of course, a good deal could be done in this direction by purely local efforts, particularly, *e.g.*, in such a cosmopolitan port as Cardiff, provided the hearty co-operation of merchants and masters be assured. But such an arrangement, however desirable in itself, would of necessity lack the completeness and scientific precision of detail only obtainable by means of the society's efforts.

I am glad to be enabled to state that our distinguished principal has already taken up this question of the formation of a museum of commercial products on the lines suggested, and considers that it would be a very powerful aid to the work carried on here. Several master mariners have kindly promised their assistance, and we hope ere long to have a well-stocked cabinet, the nucleus of which has already been formed by the contributions of the students themselves.

On this point Sir Philip Magnus observes in his handbook "Industrial Education," "In our commercial cities the pupils of the technical as well as of the commercial department should learn something of the technology of the several raw products, the manufacture of which may form the staple industry of the place, and the scholars should be encouraged to bring specimens to the museum, with which all such schools should be provided.

Take for example asbestos with its almost daily increasing uses. It is of little utility to tell your class that it is a fibrous variety of hornblende, and chemically a dark green silicate of lime and magnesia, unless at the same time you show a specimen, when its peculiar nature will almost suggest the uses to which it may be put.

Again, and I trust you will excuse my boldness, we need the establishment of a special society, such as that recently founded in Paris, for the prosecution of the study of geography, with special regard to French commerce. The annual subscription, I believe, is a matter of fifteen francs. The journal issued by the society furnishes much valuable information relating to the commercial enterprises and relations of France.

Dr. Yeats—and I can scarcely say how much the technical teachers of Cardiff are indebted to him for his valuable advice and encouragement—points out that we need, as an additional aid, to develop in our pupils, who are engaged in mercantile pursuits, an enthusiasm in their work which will also enable them to keep pace with the times. The Doctor brought to our notice a publication called "Mercurius," which, if I remember aright, is published at Rotterdam, and which is entirely conducted on lines calculated to promote the end in question by gentlemen engaged in commerce not only in Rotterdam, but in all parts of the world wherever these enterprising gentlemen may be located. This publication is not confined, I understand, to commercial geography and commerce, but deals also with the other requisites of a commercial education.

The conduct of such a publication would be a fitting sequel to the purely scholastic part of our system of commercial education. Lastly, it is necessary that a syllabus of work should be drawn up embracing the commercial geography of the world, spread over, say, three sessions. As matters stand at present, the arrangements are absolutely at the discretion of the local authority.

Could not the society take the matter up, and, after due inquiry and deliberation, submit such a scheme of work as would produce the best results? At the same time, provision should be made to enable the particular trade of the port or district to receive due prominence and treatment.

I shall not attempt to deal with the question of the qualifications of teachers of commercial geography. The question bristles with difficulties.

Although we are glad to learn from Mr. Keltie that the geographical attainments of students in training colleges are annually improving, yet the awkward fact remains that the work of the student is entirely confined to the first year's training; physical geography very properly receiving most attention. As *trained* teachers, they enjoy immense advantages as compared with persons whose knowledge of a subject is either purely literary or practical. The difficulty is, and will be, to bring about a state of things in which the *teaching* ability of a first-class trained teacher may be combined with a knowledge and grasp of the subject as is practically confined to the man of business, whose daily concern it is to deal with the subjects with which technical geography is conversant.

How Africans are to be Taught. BY THE LATE ALEXANDER MACKAY.—The agency by which, and probably by which alone, we can Christianise Africa, is the African himself. But he must first be trained for that work, and trained, too, by the European in Africa. Just as the mountains of ironstone in the continent are perfectly useless until first quarried, smelted, and forged by European tools,—which were also once nothing but ore, but by means of which alone it is possible to convert the raw African ore into implements exactly similar to themselves, and capable of replacing them in future work of the kind,—so the untrained African mind is absolutely powerless to effect any beneficial results unless first thoroughly trained by those of European tempering. This, too, must be done in Africa itself, for if the European in Africa has proved a difficulty, the African educated in Europe has proved a still more unsuitable instrument for his country's good. It behoves us, therefore, to select with the greatest care a few centres to which Europeans shall have easy access, and where they shall be able to live under comparatively healthy conditions, centres within easy reach of Natives within a wide area. Mombasa has proved a failure as to health, while the introduction of the freed-slave element would alone insure the ruin of an institution for the training of freemen. I have seen hosts of specimens of the men turned out at the institutions of Nassick, Mombasa, and Zanzibar, where freed slaves are educated, but the best I have yet met was bad. Modern educationalists have come to recognise the fact that it is not enough to cram into the student a certain amount of book-knowledge; the eye must be trained to see, and the hand to reproduce, just as much as the mind must be trained to reason. Hence none but *teachers*, born teachers, need ever expect to be able to train Africans to be teachers in their turn. Unless this point is carefully guarded, it will ever prove the weak link in the chain. It has too often been supposed that because a man is a University graduate, or has taken Holy Orders, that therefore he knows *how to teach.* Few greater delusions have prevailed, and Africa has suffered in consequence.—*Church Missionary Intelligencer*, September, 1891.

INSTRUCTIONS FOR CORRECT PRONUNCIATION OF FOREIGN GEOGRAPHICAL NAMES.

By KONRAD GANZENMÜLLER, Ph.D.

[Read to the Members, in the Library, Wednesday, December 9th, 1891.]

There are two circumstances which give pupils and teachers a great horror for study and instruction in geography. In the first place, the foreign geographical names, at the first blush, appear as mere sounds without any meaning, which can only with the greatest difficulty be imprinted on the memory ; in the second place, most of the geographical names exhibit themselves in a strange dress, wearing as they do by their spelling, as well as by their pronunciation, much that is unusual and outlandish.

In the treatise "Definitions of Geographical Names," published in the *Scottish Geographical Magazine* for June, 1891, it has been shown how the teacher, by a skilful use of the abundant material for explaining these names, may give life and spirit to a great many of these apparently dead sounds, and raise them to such significance and import that they can be very easily learnt and hardly be forgotten.

The subsequent treatise is further intended to show how to render foreign geographical names essentially easy to acquire by showing at once, when introducing a country, the respective *rules for pronouncing the names* of that country.

These rules are to be as simple as possible.

First of all the teacher will explain, and, at the same time, write on the blackboard, and then let the pupils copy the following :—

In the foreign geographical names—

A	sounds always like	*a* in father	= *ā* (a long), or
		a in fat	= *á*, *ă* (a short) ;
E	sounds nearly always like	*a* in fate	= *ē*, or
		e in met	= *é*, *ĕ* ;
I	sounds always like	*i* in marine	= *ī*,
		i in pin	= *í*, *ĭ* ;
O	sounds nearly always like	*o* in note	= *ō*,
		o in not	= *ó*, *ŏ* ;
U	sounds nearly always like	*oo* in room	= *ū*,
		u in bullet	= *ú*, *ŭ*.

Thereupon may be given the following examples :—

ā :	Bāden	Montāna	Santīāgo	Strāssburg
á :	Hártford	Chárlston	Carácas	Hálle
ē :	Hāstings	Māryland	Santa Fē	Brēmen
é :	Shéffield	Frédericksburg	Cayénne	Bréslau
ī :	Leeds	Greendale	Līma	Berlīn
í :	Brístol	Míddleton	Quíto	Linz
ō :	Hōlywell	Dắkōta	Mendōza	Cōmo
ó :	Bóston	Róckford	Orinóco	Bonn
ū :	Liverpool	Siracūsa	Angostūra	Jūra
ú :	Lake Sŭperior	Yúcatan	Acapúlco	Ulm

Peculiarly simple is the correct pronunciation of the Italian geographical names. The vowels sound always, it would be said, as just explained, and when two of them join they are to be pronounced separately : *Aĭrōlo.* The consonants are much the same as in English ; you have only to mind that c sounds, before *a*, *o*, and *u*, and before consonants, like *k*; if c is to have the sound of *k* before *e* and *i*, a mute *h* must be inserted : CHE = *ke* ; CHI = *ki* ; c sounds before *e* and *i* like *ch* in charm ; if c is to have the sound of *ch* before *a*, *o*, and *u*, a mute *i* is to be inserted: CIA = *cha*, CIO = *cho*, CIU = *chu*. It is similar with the letter G: *g* like *g* in girl, or like *j* in John. All the combinations should be written on the blackboard and copied by the scholars.

K: *ca, che, chi, co, cu;* CH: *cia, ce, ci, cio, ciu;*
G: *ga, ghe, ghi, go, gu;* J: *gia, ge, gi, gio, giu.*

GL, it would be added, is pronounced like *li* in pavilion, and GN like *ni* in union; J is always sounded like *y* in year; CC is a combination where the first *c* has the sound of *t;* SC before *e* and *i* = *sh*, ZZ = *ts*.

The pupil will now be able to pronounce for himself the following names: *Carāra, Málta, Spolēto, Palérmo, Torīno, Bríndisi, Ancōna, Cámpo Fórmio, Siracūsa, Lúcca; Cremōna, Cāpri, Ischĭă, Chiavénna, Cōmo, Custózza; Vercélli, Ticīno, Mincio; Gran Sásso, Lāgo di Cōmo, Gŭăstálla; Perūgia, Adīge, Lāgo Maggiōre, Réggio; Cáglĭări, Legnāno; Pistója; Ajáccio; Sciróccо* (the hot wind), *Bréscia; Abrúzzo.*

With very little aid from the teacher, the scholar will be delighted to find that he can master the sound of almost any Italian name.

The same result may be obtained, without any difficulty, concerning the *Spanish* names. The single vowels sound always as in Italian (or as given on page 334); *y = *i* in marine; for the most part two joined vowels are to be pronounced a little separated: *áyres;* sometimes each one is sounded: *Balĕ-āres.*

The correct pronunciation by the teacher is of the greatest importance. If the pupils frequently repeat the teacher's words, they will, in short time, master the unaccustomed sound of the foreign names.

Li (as in the Italian *Cágliari*) in Spanish is expressed by LL: *Mallórca*, and *ni* (as in *Legnāno*) by Ñ: *La Corūña;* B between two vowels sounds like *v* (with which sometimes it is interchanged, as *Córdoba, Córdova; Habāna, Havāna*); in the beginning of a word it is pronounced as *b* (but very soft): *Bilbāŏ;* CH is like the English *ch* in church: *Elche;* H is mute: *Alhámbra;* in GU the *u* sounds nearly like *w* in Tweed: *Gŭădĭāna;* QU = *k: Gŭădalquivīr;* C before *a*, *o*, and *u*, and before consonants, is like the English *c* before the same letters; C before *e* and *i*, and Z before *a*, *o*, and *u*, is pronounced by the Spaniards in Europe nearly like the English *sh: Múrcĭă, Zaragóza;* but the inhabitants of Spanish America pronounce C as a sharp *s* (or *ss*), and Z like the English *z: Asúncion, La Paz.* *As in Greek, German, and other languages, we find in the Spanish language the "*strongly aspirated h;*" this has not a corresponding sound in English, and *can only be learned by oral instruction of the teacher:* it is there commonly expressed by J: *Jenīl*, but sometimes by X: *México;* and G before *e* and *i* has the same sound: *Gerōna;* otherwise G = *g* in girl: *Segōvĭă.* The other consonants are as in English, and *every letter is pronounced.*

After having given these simple rules for pronunciation of the Spanish language, the teacher will put together the Spanish geographical names of the Iberian Peninsula (of America, Africa, and Oceania) by turns of vowels and consonants, and mark each word with the accent. The *names ending in a consonant*, usually, are *accented* on the *ultima*, and those *ending in a vowel* on the *penultima*, but there are some exceptions.

Instances are—each one of two vowels sounded in: *Pityūses, Maracăībo,* &c.; two joined vowels pronounced a little separated: *Cape Crēŭs, Pico de Téyde, Bŭēnos Ayres;* B = *b* (very soft), and B (like *v*): *Biscáya, Bilbāŏ;* C = *k: Escoriál, Acapúlco;* CH = *ch: La Máncha, Chīle;* G = *g: Segūra, Galāpagos Islands;* H is *mute: Mahón, Hŭălāga* (river); J (X), and G before *e* and *i* = a "*strongly aspirated h*": *Jēres, Cobīja; México; Cartagēna, Los Angeles;* LL = *li: Sevilla, Cordillēra;* Ñ = *ni: Catalōña, Márañon;* GU = *gw: Sĭérra Gŭădarāma, Antīgua, Paragŭăĭ;* QU = *k: Cassiquiāre, Arequīpa;* C and Z = *th: Galicia, Iviza* (island); the accent on the *ultima: Madrid,* *Santandēr ;* but *Cādiz, Barbādos* (island) ; the accent on the *penultima : Granāda, Cósta Rīca, Līma ;* but *Málaga, Bogotá, Panamà, &c.*

Scholars of higher schools know, long since, the rules for pronunciation of Greek and Latin from the instructions in these tongues ; for other pupils the teacher will say that there are in *Greek* and *Latin*, as in English, in German, and other languages, *diphthongs*, as AI and EI like *i* in pine : *Achaia ;* AU like *ou* in house : *Nauplĭa, Augústa Taurinōrum ;* EU nearly like *oy* in buoyance : *Leuctra ;* further, the Latin AE sounds like *ai* in fair: *Cumae ;* the Greek PH = *f : Philippopolis ;* RH = *r : Rhode Island ;* TH = *t : Corinth ;* CH is a "*strongly aspirated h*" (as the Spanish *j* in Jeres) : *Chalkis.* After having given this explanation the scholars will be able to pronounce correctly the Old and New Greek and the Latin geographical names, and it may be sufficient to mark with an accent a small number of them, for instance : *Zákyntho, Rhodopē Mountains, Salamvriá, Lépanto, Saloníki,* &c.

In teaching German geography it might be said that the single vowels in the German language sound always as in Italian, and the diphthongs as in Greek. But to mind is the following : AA = *ā* (a long) : *Aar ;* EE = *ē* : *Peene* (river) ; IE = *ī : Brieg ;* * but *Marīĕnburg, Marīĕnwerder, Trīént, Trīést ;* OO = *ō : Moosburg ;* OE = *o* in Lower German : *Itzehoe, Soest ;* and also OW = *ō : Dievenow ;* sometimes it is expressed by an *h* (mute), when the preceding vowel is long : the *Brahe* (brāĕ) river ; Ǟ = *ai* in air : *Jägerndorf ;* Ö is the French *eu* in peur ; it comes nearest to the English *u* in pur, but somewhat more prolonged : *Königsee,* or it is like *i* in bird : *Görlitz ;* Ü is the French *u* in paraplui (*ü* long) : *Mühlberg,* or *ü* short as in the German proper-name, Müller : *Münster ;* J consonant is like *y* in year : *Jura ;* C before *e* and *i* sounds, as in Latin, like *ts : Celle,* otherwise as in English (and Latin) ; SCH = *sh : Schleswig ;* TH = *t : Thōrn ;* V = *f : Vērden ;* W = *v : Wilhelmshaven ;* Z = *ts : Zürich ;* CK = *kk : Neckar ;* TZ = *zz : Austerlitz ;* *CH is a "*strongly aspirated h,*" as in the German word "machen" : *Hochkirch ;* but in the beginning of a name CH sounds like the English *ch* in words from Greek (chaos) : *Chemnitz ;* G in the beginning of a word = *g* in girl : *Goslar ;* at the end of a syllable it sounds nearly like the German *ch* (but very soft) : *Burg ;* NG is in High German pronounced like *ng* in king : *Elbing.*

As in the English words fálsifȳ, fálsificātion, cóngratulāte, cóngratulātor, etc., so many of the polysyllabic names in German have "the *primary* and *secondary accent,*" as *Rīesengebírge, Unterwálden, Altenbúrg,* &c.

If a vowel is to have a short sound, the consonant following it is often doubled : *Offenbach, Pillau, Mánnheim, Tróppau, Nássau, Stettīn ;* moreover, neither the long sound nor the short one is in the German language consequentially made obvious for the eyes of the reader, and, therefore, the German geographical names are best put together for the instruction of scholars by turns in long and short single vowels, modification of vowels, and dipthongs, for instance : Ā : *Naab* (river), *Nahe* (river), *Stade, Glatz ;* Á : *Halle, Stargard ;* Ē : *Schneeberg, Bremen ;* É : *Celle, Lech* (river) ; Ī : *Liegnitz, Berlin ;* Í : *Zittau, Tilsit ;* Ō : *Moosburg, Gotha, Oder,* (river) ; Ó : *Wollin, Goslar ;* Ū : *Uri, Rudolstadz ;* Ú : *Stuttgart, Fulda ;* Ǟ : *Jägerndorf ;* Ä́ : *Kärnthen ;* Ȫ : *Königsberg ;* Ö́ : *Görlitz ;* Ǖ : *Tübingen ;* Ǘ : *Glückstadt ;* AI and EI : *Baireuth, Leipzig ;* AU : *Augsburg ;* EU : *Neustadt.*

The scholars, having thus mastered the sounds of the German geographical names, it will be very easy for them to learn the correct pronunciation of the *Swedish,* Danish and Dutch names. Concerning the first we have to learn : Y = *ü* German : *Ystad, Wisby ;* the broad A sounds nearly like the English *a* in fall (approaching *o* in note) : *Tornea, Abo ;* J = *y* in year, and H and L before *j* are *mute* : *Lake Hjelmar* (yélmar), *Ljusne* (yúsne) *Elf ;* G sounds before (the "soft vowels," so before) *e* and *ö* as after an *r* (in the same root) like *y* in year : *Göta* (yöta) *Elf, Göteborg* (yötebóry̆), *Helsingborg* (hélsingbórў) ; F at the end of a syllable is like *v*, so that *Gefle*=yévlŏ ; KÖ (pronounced very strongly) have nearly the sound of *che*: *Jönköping*, *Norköping*, etc. In pronouncing the other Swedish names, as *Dal Elf*, *Klar Elf*, *Karlstad*, *Malmö*, *Upsāla*, &c., a mistake can hardly be made.

The sound of the broad *a* is also found in the *Danish* language, expressed there by AA : *Aalborg*, *Laaland ;* OE=ō (o long) : *Roeskilde ;* (the Danish letter for *ö* German is an *o* with a stroke through it) : *ö* means island ; *ö-ĕr*=islands, therefore : *Faaröer* (or *Faaroe-er*)=sheep islands. All the other Danish (and Norwegian) names, as *Bergen*, *Christiania*, *Drammen*, *Hammerfest*, *Helsingör*, *Marīĕnlyst*, *Nyborg*, *Odense*, &c., follow the rules of pronunciation for the German language.

In *Dutch* is expressed : *ū* (u long) by OE : *Broek*, the German *ü* by U : *Utrecht ; ö by* EU : *Leeuwarden* ; *ei by* Y : *Het Y* ; *Yssel ; eu* by UI : *Enkhuisen ;* (OU=*ou : Oudenaarde) ;* V sounds in the beginning of a syllable as a soft *f*, and Z always as the English *z : 'sGravenhage*, *Vlissingen*, *Zuider Zee*, *Buitenzorg ;* CH (and G at the end of a word) sound nearly like the German *ch* (but "they are fetched more deeply from the throat") : *Walcheren ;* SCH=*s-ch* (a little separated) : *Scheveningen ;* X=*ss :* island of *Texel*.

Of the Slavic languages *Russian* is spoken by a majority of people ; the vowels, which are always short, sound like in Italian. Two vowels joined must be pronounced a little separated : *Barnăúl*, *Yenisséī* ; only AI is a diphthong : *ValdaiHills ;* the unaccented O=*a* (very short) : *Oka* (ăká) river ; E sounds in the beginning of a syllable, mostly like *ye : Lake Onega* (anyéga), but *Lake Elton* (élton) ; CH is always (also as an initial letter) a "*strongly aspirated h*" : *Chárkof*, *Cherson* ; Z=*ts : Donez.* Now the teacher has only need to specify the accentuation, which often appears quite singular *(Irémel*, *Berésina*, *Borodinó*, *Sarátof*, *Vládīkăvkás*, *Vládīvŏstók*, &c.), and the scholar will pronounce correctly the Russian geographical names found in Europe and Asia.

In *Polish*, it would be added, C sounds always like *ts : Dúnajec*, *Pilica* (rivers).

The *Czech* letter C, with a circumflex, sounding like *ch*, is in English commonly expressed by *cz*, *Czernowitz*, *Wieliczka ;* the singular sound R, with a circumflex, *(rsh)* is found in *Przhémysl* (at present a fortress of the first rank in Galicia) ; EI and W are as in German, the *accent* is always on the *first syllable : Leítmeritz*, *Lówositz*, *Sádowa*, &c.

In the *Hungarian* language the vowels sound, for the most part, as in Italian and German ; but the short A, not being pronounced pure, inclines to *o*, but remains nearer a than o, so that *Magyar* sounds nearly Módyŏr (*GY blending the sounds of *d* and *y* consonant). The *accent* is (without regard to long or short vowels) always on the *first syllable.* By the sign of the accent acute long vowels are signified in Hungarian, for instance, *Szígetvár* is to be pronounced *Szigetvār* (¯=vowel long, but without the principal accent). In regard to the consonants the following is to be noticed :—SC=*ch : Kécskemēt*, *Móhācs ;* CZ=*ts* (sharp) : *Débreczin ;* S=*sh : Máros*, *Orsova*, *Témesvār ;* SZ=*ss : Szamos*, *Szégedin.*

It now only remains to speak of the French and Portuguese names ; the proper pronunciation of them is, in some degree, more difficult than that of the others, and yet even pupils that are unacquainted with the French and Portuguese languages may be brought to pronounce fairly well the appellations met with in French and Portuguese geography.

In *French*, the teacher first of all will remark, the single vowels *a*, *e*, *i*, and *o* (without having a mark of accent) sound always like the same short vowels in Italian, (*y*=*i*), and the most consonants have the same sound as in English ; but ç before *a*, *o*, and *u*=*s ;* CH=*sh ;* J=*zh ;* and G before *e* and *i* has the same sound ; G before *a*, *o*, and *u*, and before consonants, and GU before *e* and *i*=*g* in girl ; QU=*k ;* **d*, *e*, *es*, *g*, *s*, *t*, *x*, *z*, at the end of a syllable are *mute*, but make often the preceding vowel long: *Nimes* (nīm).

The *principal accent* is generally on the *final syllable*.

By this short explanation the scholar may have been enabled to pronounce correctly for himself the following French names: *Cape Grisnez* (gri-nē), *Forez Mountains*, *Garonne*, *Marne*, *Rhone*, *Yonne*, *Marche*, *Picardie*, *Arles*, *Arras*, *Bayonne*, *Biaritz*, *Brest* (t not mute), *Cannes*, *Carcasonne*, *Cette*, *Cressy*, *La Rochelle*, *Lille*, *Narbonne*, *Rennes*, *Rochfort*, *Belfort* (befōr, l mute), *Le Locle*, *Quatrebras*, *Martinique*, *Cayenne*.

Further it might be said that IE is to be pronounced as a dissyllable (cf. Trĭént): *Allier* (allĭē, r mute), *Guienne*, *Dieppe*, *Vienne; ū* (like *oo* in poor) is expressed in French by OU: *Adour*, *Doubs* (bs mute), *Cherbourg*, *Toulouse*, *Tours*, *Boulevard*, *Guadeloupe;* É=*é: Grénoble;* È=*ē: Isère*, *Angoulème*, *Sèvres;* EI=*ē: Seine;* Â=*ā* (a long); Ê=*ä* (ä German); Ô=*ō: Havre de Grâce*, *Crête de la Neige;* *Ä is also expressed by AI (ay): *Charolais*, *Lyonnais*, *Maine*, *Orléanais*, *Touraine*, *Calais*, *Douay*, *Epernay*, *Roubaix* (x mute, but) *Aix* (äks, x not mute), *Côte d'Or*, *Saôn* (sōn); *AU and EAU have likewise the sound of *ō: Aube*, *Dauphiné*, *Lausanne*, *Beaune*, *Bordeaux;* U sounds like the German *ü: Canal du Midi*, *Bar le Duc*, *Dunkerque*, *Lunéville;* UY =*üĭ: Puy de Dôme;* EU=*ö* German: *Creuse*, *Fleurus;* OI (OY)=*ŏă: Loire*, *Oise*, *Artois*, *Poitou*, *Poitiers* (rs mute), *Troyes*, *Charleroy;* LL was formerly sounded like the Spanish *ll* (li), but according to the modern popular pronunciation l is not sounded at all: *Bouillon* (formerly bulyõ) is now buyõ, *Versailles* (versāy̆), *Marseille* (marsēy̆); GN=*ni* (as in the Italian *Legnano): Cognac*, *Bagnère*, *Dordogne* (dordony̆), *Auvergne*, *Bretagne*, *Gascogne*, *Boulogne*, *Martigny*, *Ligny*.

The French have, as a singularity of their language, *nasal sounds*, which must be learned by oral instruction of the teacher. If the nasal sounds are to be marked for the eyes of the scholars to facilitate the repetition, it might be best to use the Portuguese "til," placed over that letter which is to have a nasal sound. (Of course, the "til" in Portuguese is placed over the letter before which is to be pronounced as a nasal.) Well known, moreover, is the French *Jean* (zhã), *postillon* (postiy̆õ), *Peter of Amiens* (amy̆ä), and the *treaty of Verdun* (verdö).

In giving the rules for the nasal sounds the teacher would say, at first, that the nasal sound Ã (as in Jean) is expressed in French by *en* (*am*), and *en;* then he would write the proper names on the blackboard, at once pronouncing correctly the words, and causing the scholars to repeat them; at last the pupils would copy these names on paper, and by this manner and by frequent repetition impress them indelibly on their memory.

Ã *(an, am, en): La Manche* (mãsh), *Cantal*, *Durance*, *Plateau de Langres*, *Anjou*, *Languedoc*, *Le Mans*, *Nancy*, *Orleans*, *Perpignan*, *Sedan*, *Belle Alliance*, *Cambray*, *Chambéry*, *Provence*, *Vendée*, *Canal du Centre*, *Lorient*, *Rouen*, *Vallenciennes*.

Then would follow:

õ *(on, om): Golfe du Lion* (liõ), *Mont* (mõ) *Blanc*, *Mont Cenis*, *Montmartre*, *Mont Pelvoux*, *Mont Perdu*, *Armançon*, *Roussillon*, *Avignon*, *Besançon*, *Châlons sur Marne*, *Chalon sur Saône*, *Clermont*, *Dijon*, *Lyons*, *Montbéliard*, *Montpellier*, *Soissons*, *Toulon*, *La Chaux de Fonds*, *Pondicherry*, the island of *Bourbon*, or *Reunion*, *Miquelon*, *Compiègne*.

Ä *(ain, in): Saint* (sä) *Cloud*, *St. Denis*, *St.* (sät) *Etienne*, *St. Nazaire*, *St. Quentin*, *St. Maurice*, *Mont St. Jean*, *St. Louis*, *St. Croix*, *St. Pierre*, *Pointe* (pŏät) *de St. Matthieu*, *Indre*, *Limousin*, *Azincourt*, *Port au Prince;* **iens*=IÄ: *Amiens;* ***Rheims* (räs).

ö *(un): Autun* (otö), *Verdun*.

In *Portuguese* the vowels most sound as in Italian and Spanish ; and two joined vowels must be pronounced a little separated : *Béĭra, Coímbra ;* the unaccented O sounds like ŭ in German : Macáŏ ; *li* is expressed by LH : *Serra da Estrelha, Cape Agulhas ; ni* by NH : *Minho* (in Spanish Miño), *Maranhon, Tristan da Cunha ;* C sounds always as in French, that is before *a, o,* and *u,* and before consonants, like *k,* before *e* and *i,* and with the "cedilla" (ç), also before *a, o,* and *u,* like *s : Cape Bránco, Pernambūco, Cíntra, Príncipe, Recīfe, Açōres, Bragánça ;* CH, and Z as an initial letter, *=sh : Seychelle Islands, Funchal, Xingú* (river) ; J and G before *e* and *i=zh : Tejo,* the island of *Marajo, Rio de Janeiro* (ríŭ de zhanéĭrŭ) ; G before *a, o,* and *u,* and GU before *e* and *i=g* in girl : *Cape Delgādo, Angōla, Benguéla ;* GU before *a, o,* and *u,* sounds like the Spanish *gu* before the same letters, *gŭ* (*gw,* ŭ very short) : *Cape Gŭárdafûĭ ;* H is mute : *Bahīa, Paranahyba ;* QU*=k : Sérra de Mantiquéĭra, Sérra de Monchīque, Angra Pequēna, Cape Rōque ;* S on the end of a syllable sounds like *sh : Abrantes, Elvas, Lagos, Mīnas Gerāĕs, Manāŏs.* (The other consonants are as in English : *Cape Verde, Cape Lopez, Algarve, Porto,* etc.)

Nasal-sound õ : *Cape São* (sā õ), *Vicente, São Thomé* (island), *São Páŭlo de Lŏánda, Curaçāo* (kurassā õ).

Ā (expressed by *em*) : *Alemtejo* (alātēzhŭ).

By giving the rules for pronunciation in such a plain way, beginning always with such letters as have a like or similar sound in their own language or in a well-known other one, then proceeding to those which differ, and treating, at last, such sounds as are peculiar to any one tongue, *the scholar must become independent from the teacher* and enabled to pronounce "as nearly as possible" almost all geographical appellations, met with both in school-books and in geographical works and journals, in newspapers, &c., "*as they are pronounced by the educated people of the respective countries to which they belong*" ; such is "the system now generally acknowledged to be the only rational and satisfactory one for pronunciation of geographical names." (Cf. Webster-Thomas.)

All the other appellations, as Chinese, Indian, Arabian, etc., are to be written after the rule that "*the vowels always have the sound as in Italian, the consonants as in English,*" for instance, *Korēa, Fu nīu shan* (mountains), *Ching tu fu, Rajputāna, Murshidabād, Hejūz, Mósul, Bechŭāna Land, Kilima-njāro, Sŭākīm,* &c. (It may be perhaps remarked, that the H in the Arabian *Bahr* and *Mahdi,* in the Persian *Shah,* in the Indian *Ahmedabad,* is not mute, but sounds as a soft German *ch ;* KH and GH, sounding in Oriental languages "very guttural," are by Europeans commonly pronounced as *k* and *g : Tengrikhan, Tengridagh, Khartum,* &c.)

Particular and carefully *marked accents* should be used, as already mentioned, to impress upon the learner the correct pronunciation. This is a point of capital importance, since *the knowledge of the pronunciation fixes the words in the mind.*

In elaborating the plan of a method for facilitating and vivifying the study of Geography by an explanation of place-names—together with a simple instruction for pronunciation—it would be of service to provide a survey and review of the teacher's work. In this way the facts, made fresher by repetition, would be more deeply impressed on the memory.

In the little work elaborated by the writer, and entitled *Definitions of Geographical Names, with Instructions for their Correct Pronunciation (for the Higher Schools),* the rules for pronunciation are given as each European country is taken up. For other parts of the world in which European names are found, reference should be made to what has been already written.

In an *appendix* it would be shown by a systematical table (with examples), firstly, how any one English letter has another sound in this or that foreign language ; and secondly, how any one English sound is expressed by another letter in any one other tongue, for instance: 1. The English *ch*=CH in *Chester*, and in the Spanish *Elche ; ch*=K in *Christchurch*, in the German *Chemnitz*, in the Norwegian *Christiania*, and in the Italian *Chiavenna ; ch*=SH in French: *Châlons ;* and in Portuguese: *Funchal ; ch* is a "*strongly aspirated h*" in Greek: *Chalkis ;* in German: *Hochkirch ;* in Russian: *Charkof ;* in Dutch: *Walchēren.* 2. The English *ch* in *Chester* is expressed by CH in Spain: *Elche ;* by C and CI in Italian: *Toce, Mincio ;* by C (CZ) in Czech: *Czaslau ;* by CS in Hungarian: *Mohacs.*

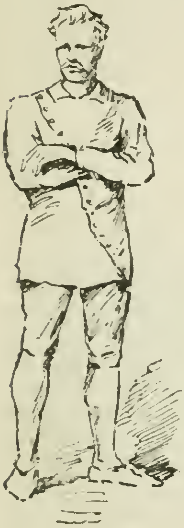
All these mentioned distinctions will be made clear by the use of type of different sizes.

This would complete a sufficient "guide" for the various higher schools, and a most "useful supplement to every school geography ;" and, certainly, it might be not a little *advantageous for the pupils to have for repetition the explanation and pronunciation of geographical names* separated from the other always very copious matter, *in a concise and conspicuous form.*

Cotton Cultivation in Central Asia.—It is an open secret that the Russian Government has for some years past been actively encouraging the cultivation of cotton in territories under its rule in Central Asia. It is now virtually declared that the period is not far distant when the Russian mills will be independent of foreign supplies of cotton. The popular notion of the climate of Russian Asia is a very erroneous one, being based upon the idea of a prevailing low temperature and of desert-like lands. Nothing can be further from the truth, and, as Mr. George Kennan has pointed out, even Siberia in parts has a mean summer temperature of 72° F. The provinces of Turkestan, Khiva, and Bokhara have a temperature equal to that of the cotton-growing States of America. Mr. Henry G. Kittredge, of Boston, in an article appearing in the 1890 issue of "Cotton Facts," compares the temperature thus: "The Aralo-Caspian slope in Turkestan lies between the isothermal lines of 68° F. and 77° F. in July, and between 5° F. and 23° F. in January. At Samarkand the mean annual temperature was 58·1° F., with a range from 3° F. to 104° F. At Tashkend the mean annual temperature was 55·7° F., with a range from 10° F. below zero to 101° F. above. The rainfall for the year in the two places was about 15 inches, and the mean relative humidity about 64°." The same gentleman gives the mean annual temperature in Augusta, Ga., as 65° F., with a range from 7° F. to 102° F. At Vicksburg the figures were 66° F., with a range from 12° F. to 101° F. The relative humidity was 69°, and the rainfall from 50 to 60 inches. It is thus apparent that the conditions, with the exception of the rainfall, are not unfavourable to the growth of cotton. A glance at a recent map will show that Turkestan and Bokhara are pierced by streams which afford a ready means of carrying out irrigation works, thus compensating as in India for the lack of rainfall. There is every reason to believe that the Russian Government has already carried out extensive works of this character. Whatever may be the cause, there can be no doubt as to the actual increase in the growth. The quantity of cotton exported to Russia prior to the opening of the Trans-Caspian Railway was 19,400,000lbs. Since that time the country has been opened, American seed distributed among the natives, and great concessions made to cultivating companies. The average yield per acre is from 600 to 700 lbs. of seed cotton, about one-third of which is lint, the length of staple being said to be, by Mr. J. S. Scott, of South Carolina, ¾ to ⅞ths of an inch. The result of the efforts made is, as stated by Mr. Kittredge, that 75,000,000 lbs. was estimated to be the export for the last season. There is, therefore, little doubt that Russia is justified in looking for a sufficient supply of cotton for her needs from these territories.—*The Textile Recorder*, October, 1891.

DR. NANSEN AND THE NORTH POLE.

THE NEW VIKING SHIP.

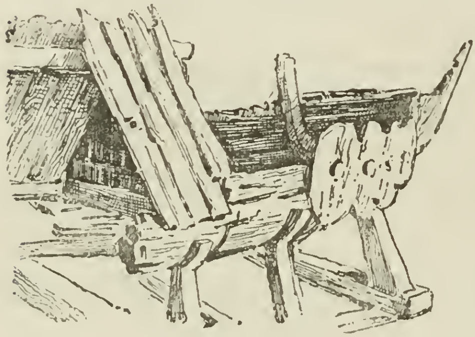


DR. FRIDTJOF NANSEN.

CHRISTIANIA spite of its beautiful fjord and its girdle of forest-clad hills, spite of the signs of Royal residence and of the seething of Home Rule politics, seemed to us the least interesting and least characteristic place we had seen in Norway. This was no doubt due to the shortness of our stay, and to our disinclination to turn it to account by hunting up the sights of the capital. We were content with a delicious dip in the fjord—rivalling one we had enjoyed in the mazy waters of Arendal—and a visit to the Viking Ship. Who does not know the story of how this wonderful craft was brought forth, almost intact, from the burial-mound of the old Sea King at Gokstad, after being hidden from sight for eight centuries? Who that has seen Christiania has not gazed almost with awe at the blackened but still sound and strong planks and timbers, the quaintly-carved devices, the primitive but serviceable gear, the staunch workmanship, and the fine lines of the ancient dragon ship, the shields and rowing-places of her eighty sea-gangers, and the tent and bed of their chief? It brings back to us, as nothing else could do, the Heroic Age, when the keels of the Norsemen were on every sea between the Bosphorus and Archangel, and the terror of them in every land within reach of the salt water.

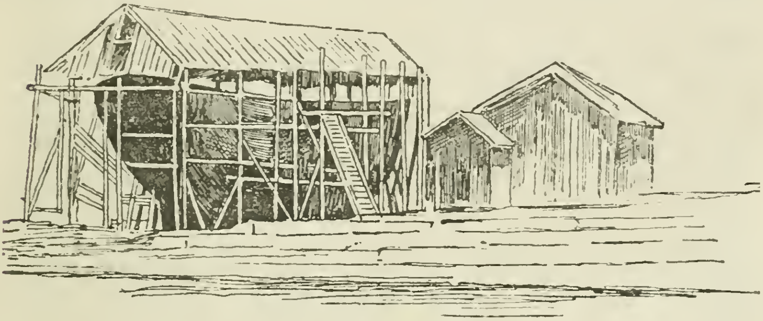
By a natural association of ideas, the Viking Ship suggested to our minds Dr. Fridtjof Nansen, the intrepid crosser of the Greenland Inland Ice, and latest competitor for the honour of capturing the "Secret of the Pole." We took train for Lysaker, and by a delightful winding way, overhung by odorous pine trees and bordered by wild flowers and berries, reached his charming home on the borders of an inlet of the fjord. Dr. Nansen received us with true Norwegian courtesy and kindness, and entered heartily into our plans for examining the Polar ship which is being built for him by Mr. Colin Archer, at Laurvig. Those who have had the pleasure of meeting him, or have even read his book, do not need to be told that he is the ideal of the athlete and of the investigator—of the man who plans and who carries into action what he devises. They may question whether his scheme of reaching 90 degs. North, by taking advantage of the supposed drift of ice from the Siberian coast across the Polar area to the shores of East Greenland and the Atlantic, be practicable, or, if practicable, whether the risks do not vastly exceed the prospects of success. But they will not question that, if the thing can be done, Dr. Nansen is the man to do it. In conversation, we found that his plans are not yet fully matured. He is labouring hard, in intervals of other scientific work, at the details of the route and of the ways and means of reaching the highest possible latitude. He has not even made up his mind that the Behring Strait is the best channel of access by which he can place his ship in the currents of fresh and comparatively warm water issuing from the Lena and other great rivers of Northern Asia, which, according to his theory, drawn from the experience of the Jeannette and other voyages, float the ice past the

New Siberian Islands into and across the Polar basin. By approaching from the Atlantic side, and following the northern coasts of Europe and Asia eastwards, in the line taken by Nordenskjold and Wiggins, until he reaches a suitable point for entering the ice or pursuing the leads of open water which he expects to find, there might be an immense saving of time. In case of his not finding open water to bring him all the way to the Pole, Nansen's bold idea is to make the ice-floes, hitherto the great danger and obstruction to Polar research, the means of bearing him up to the apex of the planet. To objections founded on the disappointment and failure that have attended previous voyagers, his reply is that his vessel is of an entirely novel build, and his aim and purpose quite different from those of his predecessors. The "New Viking Ship," as I have tentatively called her, is specially constructed to resist and survive ice-pressure. Apart from her enormous strength—almost as great as if she were a solid mass of hardwood—her lines are such that on the impact of the ice she will be raised up on it, instead of being caught and crushed. In section she is very nearly semi-circular, and her outer sheathings of plankings are so thick as almost to cover the keel, leaving no surface that can be "nipped" and held by the floe.


THE OLD VIKING SHIP.

Having guided himself into the pack by sail and steam—for the vessel will be provided with engines capable of giving a speed of six or seven knots per hour, which on the failure of favourable winds, or in entering or backing out of floes, can be employed with effect — Nansen proposes to commit himself and his companions to the tender mercies of the ice. He will get upon its back, and ride whither it listeth, having previously carefully studied its movements and satisfied himself that it will probably bear him to and across the North Pole. He confesses that it will be a dire disappointment if, should he be fortunate enough to reach the goal of his desire, he finds there no solid ground or outstanding natural feature, but only ice and water. For one thing, it would destroy the value of the nice pendulum experiments and astronomical and magnetic observations which he proposes to undertake and which would give his voyage its chief interest in the eyes of science. But, as he remarked, wherever exploration has been pushed in these shallow Arctic seas, solid land has been reached, and he is confident that if fortune should guide him to 90 degs. North latitude, he will be able to find stable ground for completing his work. He can rely, and, as will be seen, with good reason, on his ship; he can also trust his comrades. Only eleven men will accompany him on his daring quest, and the vessel will be provisioned for five or six years' stay in the Arctic. The trusty and hardy Sverdrup, his right-hand man in the "Crossing of Greenland," will be his sailing master, and Mr. Ingebretsen, an experienced old whaler and sealer, will be first mate. Dr. Nansen is full of energy and hope, but he does not underrate the risks of his enterprise. He pointed out to us in his study and sitting-room the trophies and memorials of previous ice voyages—tusks of the walrus and narwhal, skins of white bears, Esquimaux weapons and ornaments, photographs and sketches by well-known Norwegian artists of scenes of ice peril and adventure. There was an inspiring whiff of the Arctic seas and snow-fields about the man and his surroundings, as, standing upon a huge white bear's skin, he modestly told us, in answer to a question, the history of the former owner. He had shot it, with many others of its kind, while out on his first Greenland voyage in the Viking. It had dived, and expecting it to reappear behind a floe, he was making a a stepping-stone of a fragment of ice scarcely large enough to bear his weight, when Bruin's wicked teeth and claws suddenly emerged within a yard of him. A snap shot settled the monster's fate. "If I had not added him to my collection, he would have added me to his," said Nansen.

A seven hours' sail on board the comfortable coasting steamer Lindenholm took us to Laurvig, a charming little town, whose business soul is centred in timber and shipping. Mr. Archer, a Scotchman by descent, gave us a genial welcome, and—Sunday as it was—put himself to trouble to oblige us. The New Viking Ship lies on the stocks at Redvik, a snug little bay some three miles from Laurvig. To reach it by land you cross a famous salmon and lumber river bearing the Scotch-sounding name of Laagen (Logan), and by sea you wind round projecting headlands crowned by grove and villa, church spire and flagstaff. Partly from its broad-beamed shape, reminding one of the big-bellied craft that provide Bergen with firewood, partly from the great knuckles of rock that surround it, the exploring ship does not at first sight look its size and dimensions. These, as given by Mr. Archer in a paper contributed to the *Tidsskrift for Sœvœsen*, are as under: Length of keel, 31 metres; length at water-line, 34½ metres; length between perpendiculars, 39 metres; breadth at water-line, over ice-skin, 10 2-5 metres; greatest breadth, 11 metres; depth, 5¼ metres; draught of water with light cargo, 3¾ metres; displacement with light cargo, 530 tons; displacement when drawing 4¾ metres, 800 tons. The enormous thickness of the timbers and sheathing makes the displacement unusually large in proportion to the carrying capacity, which, with a freeboard of 39 or 40 inches, will be some 380 tons. Like the old Viking Ship, the new craft is in the meantime partially screened from the weather by a timber "tent." Only after scrambling on board, and descending into the hold, do the exceptional character and strength of the vessel become fully manifest. Massive wooden beams, stanchions, and natural knees support and brace the upper and under decks; below the latter is the receptacle for coal, while in the space above the provisions and other stores will find room. The engines and the quarters of the commander of the expedition and the rest of the ship's company are in the after part of the vessel, the cabins being, for the sake of warmth, in close proximity to the boilers. The keel is a fine piece of American elm, and the timbers are of old seasoned Italian oak that had long lain in the Government navy yard, and



THE NEW VIKING SHIP.

are so hard that, as Mr. Archer told us, the workmen complained that they blunted their tools and were as difficult to dress as flint rock. The inside planking is of Norwegian pitch pine and oak, and there are outer-skins of three-inch and four-inch German oak, imported from Stettin, while above these is the "ice-skin" of greenheart, supplied by Mr. M'Lean, of Grangemouth, diminishing from six inches at the water-line to three inches at the keel. The vessel will be rigged as a three-masted schooner, and Dr. Nansen expects her to be ready in the course of two or three months. He will probably, however, have to exercise much patience before he can complete his preparations and set forth on his bold enterprise, and still more before he can anchor the New Viking Ship to the North Pole.*

THE BASIN OF THE BENI.

By Chevalier GUILLAUME, Consul-General of Peru.

[Read to the Members in the Library, October 14th, 1891.]

THE Bolivian explorer, Colonel José M. Pando, who recently travelled in the zone watered by the Beni and its numerous tributaries, has sent a short account of the regions to the Geographical Society of Lima, Peru.

The information given corroborates the report made by Padre Armentia, Colonel Labre, and others, which appeared in the proceedings of last year.

The climate is warm and humid, but healthy the greater part of the year, excepting during the months of March, April, and May, when some cases of intermittent fever appear. The average temperature in the months of December, January, and February is 78° Fahr., and the rains are very heavy. The forests abound in beautiful woods—the siphonia, or indiarubber tree, being the most valuable. There are dyewoods, cabinet woods, textile, and medicinal plants. Barks, ipecacuana, copaiba, vanilla, and resinous plants; delicious fruits, and flowers of extraordinary perfume. The cocoa tree is abundant, and sugar, rice, yuca, and maizeis cultivated with great success.

The industrial population of the Beni and Madre de Dios is about 5,000. The wild tribes are principally the Caripunas, in the vicinity of the Abuna; the Araonas, and Pacuaras, between the Aquiry and Madre de Dios; the Toromanas and Uacanaguas, between the latter river and the Madidi; and the fierce Guarayos, which extend to the eastern valleys of the Andes. The dialect they speak is chiefly the "Tacana," more or less.

The plots of pasture ground, "pajonales," which appear like large islands in the forests, near the Beni, towards Mattogrosso, become one vast plain of pasture, and are most valuable for rearing cattle and horses. Gold is found in the river Itenez, near Santa Rosa and San Simon. The climate of Mattogrosso is always healthy, the atmosphere, although humid at times, becomes dry. The average altitude is 1,200 feet, and mean temperance 75° Fahr., during the summer.

A small steamer navigates the Beni belonging to Srs. Braillard and Clauaisen. On the Mamoré plies a steamer belonging to Sr. Anto Chavez, a Bolivian merchant. Another will soon be placed on the Madre de Dios by Sr. A. Roca; and Sr. Antonio Vaca Diez is about to place a steam-launch on the River Ortoñ. The Madre de Dios, like the Beni, is navigable for 250 miles. It is the Madre de Dios which Sr. Pando is now about to explore.

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CORRESPONDENCE.

THE FOLLOWING PROPOSALS ARE SUGGESTED IN REFERENCE TO THE "ORTHOGRAPHY OF GEOGRAPHICAL NAMES" BY THE ROYAL GEOGRAPHICAL SOCIETY, LONDON :—

1, Savile Row, Burlington Gardens, W.,
December 11th, 1891.

In 1885 the Council of the R.G.S., impressed with the necessity of endeavouring to reduce the confusion existing in British maps with regard to the spelling of geographical names, in consequence of the variety of systems of orthography used by travellers and others to represent the sound of native place-names in different parts of the world, formally adopted the general principle which had been long used by many, and the recognition of which had been steadily gaining ground, viz., that in writing geographical native names vowels should have their Italian significance and consonants that which they have in the English language.

This broad principle required elucidation in its details, and a system based upon it was consequently drawn up with the intention of representing the principal syllabic sounds.

It will be evident to all who consider the subject, that to ensure a fairly correct pronunciation of geographical names by an English-speaking person an arbitrary system of orthography is a necessity. It is hardly too much to say that in the English language every possible combination of letters has more than one possible pronunciation. A strange word, or name, even in our own language is frequently mispronounced. How much more with words of languages utterly unknown to the reader.

The same necessity does not arise in most continental languages. In them a definite combination of letters indicates a definite sound, and each nation consequently has spelt foreign words in accordance with the orthographic rules of its own language.

It was therefore not anticipated that foreign nations would effect any change in the form of orthography used in their maps, and the needs of the English-speaking communities were alone considered.

The object aimed at was to provide a system which should be simple enough for any educated person to master with the minimum of trouble, and which at the same time would afford an approximation to the sound of a place-name such as a native might recognise. No attempt was made to represent the numberless delicate inflexions of sound and tone which belong to every language, often to different dialects of the same language. For it was felt not only that such a task would be impossible, but that an attempt to provide for such niceties would defeat the object.

The adoption by others of the system thus settled has been more general than the Council ventured to hope.

The charts and maps issued by the Admiralty and War Office have been, since 1885, compiled and extensively revised in accordance with it. The Foreign and

Colonial Offices have accepted it, and the latter has communicated with the Colonies requesting them to carry it out in respect to names of native origin.

Even more important, however, than these adhesions is the recent action of the Government of the United States of America, which, after an exhaustive inquiry, has adopted a system in close conformity with that of the R.G.S., and has directed that the spelling of all names in their vast territories should, in cases where the orthography is at present doubtful, be settled authoritatively by a committee appointed for the purpose.

The two great English-speaking nations are thus working in harmony.

Contrary to expectation, but highly satisfactory, is the news that France and Germany have both formulated systems of orthography for foreign words, which in many details agree with the English system.

The Council of the R.G.S., by printing the Rules in "Hints to Travellers," and by other means, have endeavoured to ensure that all travellers connected with the Society should be made aware of them; but as it is possible that some bodies and persons interested in the question may still be in ignorance of their existence and general acceptance, they feel that the time has come to again publish them as widely as possible, and to take every means in their power to aid the progress of the reform.

To this end, and with a view to still closer uniformity in geographical nomenclature in revisions of editions of published maps, a gigantic task requiring many years to carry out, the Council have decided to take steps to commence tentatively indexes of a few regions, in which the place-names will be recorded in the accepted form.

M. E. Grant Duff, President.

RULES.

The Rules referred to are as follows:—

1. No change is made in the orthography of foreign names in countries which use Roman letters: thus Spanish, Portuguese, Dutch, &c., names will be spelt as by the respective nations.

2. Neither is change made in the spelling of such names in languages which are not written in Roman character as have become by long usage familiar to English readers: thus Calcutta, Cutch, Celebes, Mecca, &c., will be retained in their present form.

3. The true sound of the word as locally pronounced will be taken as the basis of the spelling.

4. An approximation, however, to the sound is alone aimed at. A system which would attempt to represent the more delicate inflexions of sound and accent would be so complicated as only to defeat itself. Those who desire a more accurate pronunciation of the written name must learn it on the spot by a study of local accent and peculiarities.

5. *The broad features of the system* are:—

(*a*) That vowels are pronounced as in Italian and consonants as in English.

(*b*) Every letter is pronounced, and no redundant letters are introduced. When two vowels come together, each one is sounded, though the result, when spoken quickly, is sometimes scarcely to be distinguished from a single sound, as in *ai*, *au*, *ei*.

(*c*) One accent only is used, the acute, to denote the syllable on which stress is laid. This is very important, as the sounds of many names are entirely altered by the misplacement of this "stress."

6. Indian names are accepted as spelt in "Hunter's Gazetteer of India," 1881.

The following amplification of these rules explains their application :—

Letters.	Pronunciation and Remarks.	Examples.
a	*ah, a* as in *father*	Java, Banána, Somáli, Bari.
e	*eh, a* as in *fate*	Tel-el-Kebír, Oléleh, Yezo, Medina, Levúka, Peru.
i	English *e; i* as in *ravine;* the sound of *ee* in *beet.* Thus, not *Feejee*, but	Fiji, Hindi.
o	*o* as in *mote*	Tokyo.
u	long *u* as in *flute;* the sound of *oo* in *boot. oo* or *ou* should never be employed for this sound. Thus, not *Zooloo*, but	Zulu, Sumatra.
	All vowels are shortened in sound by doubling the following consonant	Yarra, Tanna, Mecca, Jidda, Bonny.*
	Doubling of a vowel is only necessary where there is a distinct repetition of the single sound	Nuulúa, Oosima.
ai	English *i* as in *ice*	Shanghai.
au	*ow* as in *how* Thus, not *Foochow*, but	Fuchau.
ao	is slightly different from above	Macao.
aw	as in *law.*	
ei	is the sound of the two Italian vowels, but is frequently slurred over, when it is scarcely to be distinguished from *ey* in the English *they.*	Beirút, Beilúl.
b	English *b.*	
c	is always soft, but is so nearly the sound of *s* that it should be seldom used. If *Celébes* were not already recognised it would be written *Sclébes.*	Celébes.
ch	is always soft as in *church*	Chingchin.
d	English *d.*	
f	English *f. ph* should not be used for the sound of *f.* Thus, not *Haiphong*, but	Haifong, Nafa.
g	is always hard. (Soft *g* is given by *j*)	Galápagos.
h	is always pronounced when inserted.	
hw	as in *what;* better rendered by *hw* than by *wh*, or *h* followed by a vowel, thus *Hwang ho*, not *Whang ho*, or *Hoang ho.*	Hwang ho, Ngan hwi.
j	English *j. Dj* should never be put for this sound	Japan, Jinchuen.
k	English *k.* It should always be put for the hard *c.* Thus, not *Corea*, but	Korea.
kh	The Oriental guttural	Khan.
gh	is another guttural, as in the Turkish	Dagh, Ghazi.
l m n	As in English.	
ng	has two separate sounds, the one hard as in the English word *finger*, the other as in *singer.* As these two sounds are rarely employed in the same locality, no attempt is made to distinguish between them.	
p	As in English.	
ph	As in *loophole*	Chemulpho, Mokpho.
th	stands both for its sound in *thing*, and as in *this.* The former is most common.	Bethlehem.
q	should never be employed ; *qu* (in *quiver*) is given as *kw.* When *qu* has the sound of *k*, as in *quoit*, it should be given by *k.*	Kwangtung.

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* The *y* is retained as a terminal in this word under Rule 2 above. The word is given as a familiar example of the alteration in sound caused by the second consonant.

Letters.	Pronunciation and Remarks.	Examples.
r	As in English.	
s		
sh		
t		
v		
w	....	Sawákin.
x		
y	is always a consonant, as in *yard*, and therefore should never be used as a terminal, *i* or *e* being substituted as the sound may require.	Kikúyu.
	Thus, not *Mikindány*, but	Mikindáni.
	not *Kwaly*, but	Kwale.
z	English *z*	Zulu.
zh	The French *j*, or as *s* in *treasure*	Muzhdaha.
	Accents should not generally be used, but where there is a very decided emphatic syllable or stress, which affects the sound of the word, it should be marked by an *acute* accent.	Tongatábu, Galápagos, Paláwan, Saráwak.

CORRECT PRONUNCIATION OF FOREIGN GEOGRAPHICAL NAMES.

Dresden : Neustadt, Königstrasse, July 18th, 1891.

Gentlemen,—For several years I have directed my attention to the study of geograghical onomatology, and have become convinced that in teaching geography simple explanations of foreign geographical names would essentially aid the memories of pupils, lighten the teachers' tasks, and give a more lively interest to the whole subject.

If the method for enlivening and facilitating the study of geography by an explanation of place-names—together with a simple instruction for their correct pronunciation—be approved of and generally followed, it would be desirable that the pupils should have a book for repetition and for impressing on their minds what their teacher had only explained and pointed out to them on the map.

I have published a part of my "Definitions of Geographical Names, with Instructions for their Correct Pronunciation, for the Higher Schools," in the "American Geographical Society Bulletin," vol. xxi., No. 4, December 31, 1889 (pp. 516-526), vol. xxii., No. 2, June 30, 1890 (pp. 211-218), No. 4, December 31, 1890 (pp. 566-574); and besides, a treatise, calculated to draw attention to my work, entitled, "How to Enliven Geographical Instruction and to Lighten It," in the same "Bulletin," vol. xix., No. 4, December 31, 1887. This treatise I then remodelled, adapted it to the English school system, and increased it by a very simple guide to the correct pronunciation of foreign geographical names. The Royal Scottish Geographical Society, at Edinburgh, published the first part of my paper in the *Scottish Geographical Magazine* for June, 1891, and I offer the second part to your Society.

The knowledge of our globe has, of late years, made extraordinary progress, and every day new matter is added; geographical knowledge accumulates, the world's intercourse has become brisker from day to day. Geographical instruction then must become more and more extensive, and the study of our globe more and more intensive. If then a means has been found easily to impress on memory, if not all, at least a great many of hard and repellent foreign names, one should think that a small pamphlet, giving a survey of so many geographical names (together with a very simple instruction for their correct pronunciation), serving at the same time as a supplement to every school geography, must soon spread in thousands of copies.

I submit the fruit of my labour to your favourable judgment.

Very faithfully yours,

KONRAD GANZENMÜLLER, Ph.D.

Commission Permanente Internationale pour la Protection des Émigrants,
Paris, le 7 Octobre, 1891.

Monsieur le Président,—Nous avons l'honneur de vous adresser le premier Bulletin de notre Commission et nous appelons votre attention sur nos travaux et sur le but que nous poursuivons.

Nous serions très heureux de voir votre Société prendre part à nos Conférences qui auront lieu du 22 au 24 Octobre et nous vous prions de vouloir bien donner le nom de son représentant à M. le Secrétaire-Général, 30 rue Taitbout.

Veuillez agréer, Monsieur, l'assurance de nos sentiments distingués.

Le Secrétaire-Général, Prince de Cassano.

Le President, E. Levasseur, de l'Institut.

A Monsieur le Président, de la Société de Géographie, Manchester.

THE MANCHESTER MUSEUM.

[The following report, which is of interest to the Members, was read at a Meeting of the Society, July 27th, 1891.]

The first report on the Manchester Museum, Owens College, has just been issued. The record of more recent events is prefaced with an account of the history and scope of the institution. We are reminded that the nucleus of the present collection was furnished by the specimens formerly belonging to the Manchester Natural History Society, which was founded in 1821, and for many years accomplished a most useful work in stimulating and fostering the study of botany and zoology in South Lancashire. In the year 1864, the society feeling its resources inadequate to the proper development of its collections, offered them to the Manchester Corporation, on terms, however, which that body did not feel itself able to accept. Ultimately they were placed in the hands of the Council of the Owens College, which undertook to hold them in *trust* for the *benefit of the public* as well as of the College. About the same time a similar disposition was made of the valuable collections formerly belonging to the Manchester Geological Society, which were due in a great measure to the long continued attention of Mr. James Heywood, Mr. E. W. Binney, Mr. G. Wareing Ormerod, and Mr. H. Mere Ormerod. The conditions of these transfers were, speaking generally, that the College should house and maintain the collections, and give the public access to them on certain days, free of charge, at the same time receiving in trust, for the use of the museum, a fund of about £14,000, representing the assets of the Natural History Society after the discharge of all its liabilities. For some years it was impossible to provide suitable premises for the collections, which consequently had to be stored in such small compass that a large part of them was practically inaccessible. At length, however, in the year 1888, the new museum buildings, erected by public subscription, aided by a donation of £28,000 from the Whitworth legatees, were completed, and the transfer and proper arrangement of the collections were begun. The new museum was formerly opened on June 8, 1888, but it had already rendered useful service as the reception rooms of the British Association, in the autumn of 1887. On the opening of the new buildings, the Council of the college considered it desirable that the staff of the museum should be re-organised and increased, and that the head of the staff should give the whole of his time to his duties in the museum. Professor Boyd Dawkins therefore resigned the office of curator, which he had filled since the establishment of the Museum Trust in 1869, and joined a committee of management, specially charged by the Council with the direction and care of the museum. The staff now consists of a keeper and three assistant keepers, with three attendants. The professors of botany, geology, and zoology, and the lecturer on mineralogy are charged with the scientific supervision of these several departments of the museum, and the assistant lecturers in the science department of the college also give a portion of their time to museum work. The lines upon which the museum work is conducted are intended to be as broad and liberal as possible; it takes cognisance of natural history in a wide sense, with special reference to mineralogy, geology, zoology, and botany, without, however, excluding such subjects as ethnology and anthropology. The whole of the collections are open free of charge, to the inspection of the public, and special facilities, in the way of access both to specimens and books, are offered to persons making a serious study of any branch of natural history. The maintenance of an institution so large as the Manchester Museum has now become, necessitates a considerable annual outlay. The funds left in the hands of the Council by the Manchester Natural History Society, even when augmented by a special gift for maintenance from the trustees of the late Sir Joseph Whitworth, are quite inadequate to the working expenses, so that the college is every year called upon to expend from its own funds a large sum for the maintenance of a public institution, such as in many other large towns is supported by the rates.

Speaking of the work at the museum for the session 1889-90, the keeper (Mr. W. E. Hoyle) states that the progress which was made in the arrangement of the museum has produced a very conspicuous change in its internal appearance. The whole of the cases in the upper portion of the building have been completed, with the exception of one wall case in the historic room, which has since been finished. The work of placing the specimens in the cases in provisional order was at once undertaken, and is now complete, so that the majority of the cases contain a fair amount of material for the inspection of the public. Some considerable time must, however, elapse before it will be possible to have all these objects definitely arranged and accurately labelled. Details are given of the work which has been done in the geological, zoological, botanical, and other departments, and it is also stated that the museum library has now been placed on a satisfactory footing. The books formerly belonging to the Manchester Museum Trust have been transferred to it, along with the series of British Museum catalogues presented from time to time by the trustees of the British Museum. A number of valuable standard works have been purchased by the Whitworth benefaction, and others have been received as donations from various friends. The library now contains 1,142 volumes. The afternoon lectures were fairly attended, but the evening demonstrations by the keeper did not meet with satisfactory encouragement, and hence it is not proposed to repeat them during the coming session. The few demonstrations given gratuitously on the afternoons of public holidays were numerously attended, and it is proposed to give a small number of similar ones during the coming session. The number of visitors to the museum has shown a gratifying increase since the whole building was opened in January of the present year. During the summer months the number has been recorded by the attendants as accurately as circumstances permitted. The average on each day has been 100, the maximum 393, and the minimum 25.

Coffee Growing at Lake Nyassa.—We have constantly heard it stated that free labour cannot be procured in Central Africa ; but that this is a fallacy has long ago been proved by the benevolence of Mr. James Stevenson, whose road between lakes Nyassa and Tanganyika has now become one of the historic highways of Africa. Free labour has also been largely employed by the African Lakes Company through the enterprise of the brothers Moir and Messrs. Buchanan. We have frequently heard that no coffee fetches a better price in Mincing Lane than that produced by African free labour on the shores of Lake Nyassa, and we now find this confirmed by Dr. Kerr Cross, who gives the following interesting description of the single coffee plant, which, under providence, has been the means of establishing coffee growing in the highlands of Nyassa Land. The story of a coffee plant, as told by Dr. Kerr Cross, possesses quite a romantic interest. Some ten years ago the authorities of Kew Gardens sent out by way of experiment a number of slips of the coffee plant to Blantyre, in Central Africa. Unfortunately, only one survived the long journey ; but this, as might be expected, was a particularly healthy and hardy little shrub. It grew, bore seed, proved itself wonderfully productive, and is now the progenitor of a million of plants growing on one estate alone, besides hundreds of thousands of others in that region. In three years the plants give return. The quality is also good, as shown by the fact that Shiré coffee has recently been fetching wholesale 112s. a hundredweight in the London Market. That little cutting from Kew bids fair, as Mr. Cross says, to have a mighty civilising influence on this part of Africa, and to confer an inestimable boon on its people.—*The Anti Slavery Reporter.*

LIST OF JOURNALS, MAPS, ATLASES, &c.,

ACQUIRED BY THE SOCIETY FROM JANUARY 1ST TO DECEMBER 31ST, 1891, NOW IN THE LIBRARY.

With an indication of some of the principal papers in the Journals.

⁂ Only the most important articles have been indicated. A very large number of smaller articles of great interest will be found on reference to the books themselves.

MAPS.

THE WORLD.

The World. Commercial Chart (Mercator's Projection). By J. Bartholomew. With insets. 50in. by 69in. G. Philip and Son, London, 1891.

Carte Générale des Services Maritimes Postaux Français. Par MM. P. Jaccottey, Mabyre, et E. Levasseur. 24in. by 41in. Institut Géographique de Paris.

EUROPE.

Europe. Physical. Class Lesson Series, No. 92. Scale 135 miles to the inch. 21in. by 30in. T. Ruddiman Johnston & Co., Edinburgh.

Europe. Test Map. Class Lesson Series, No. 94. 21in. by 30in. T. Ruddiman Johnston & Co., Edinburgh.

England and Wales. Modern Map. Scale 1/443,520, or 7 miles to the inch. In four sheets, each 32in. by 26in. * W. and A. K. Johnston, Edinburgh and London, 1889.

England. Bird's Eye View. Class Lesson Series, No. 9. 21in. by 30in. T. Ruddiman Johnston & Co., Edinburgh.

Scotland. Commercial Map. Class Lesson Series, No. 31. 21in. by 30in. T. Ruddiman Johnston & Co., Edinburgh.

Manchester Ship Canal. Revised October, 1891. Ship Canal Company.

Cornwall. With index, &c. Scale 1/316,800, or 5 miles to the inch. G. W. Bacon and Co., London.

Devonshire. South and East Divisions. Scale 1/253,440, or 4 miles to the inch. G. W. Bacon & Co., London.

Carta delle Strade Ferrate Italiane, al 1c Aprile, 1891. Scale 1/1,500,000. 32in. by 24in. Publicata per cura del R. Ispettorate Generale delle Strade Ferrate dall' Istituto Cartografico Italiano, Roma. * Istituto Cartografico Italiano, Roma.

Sicilia. Carta Generale. Disegnata da G. E. Fritzsche. Scale 1/500,000. 18in. by 24in. Istituto Cartografico Italiano, Rome, 1891. * Istituto Cartografico Italiano.

Maps of Switzerland. Printed on calico. R. Leuzinger, Berne, 1891.

Bernese Oberland and Interlaken. Scale 1/200,000. 6in. by 12in.

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* Donor.

Chr. Michel's Alpen Karte. Westlisches Blatt. Schweiz. Scale 1/600,000. J. A. Finsterlin, München, 1891.

Carte du Cours et de l'Embouchure de la Seine de Rouen au Havre. Par R. Vuillaume. Scale 1/125,000. Paris, 1891. * Mr. H. Cruse.

ASIA.

Tonquin. Carte Provisoire du Tonkin. Dressée à l'Etat-Major de la Division d'Occupation sous la Direction de M. le Commandant Berthaut. Scale 1/500,000. 4 sheets, each 19in. by 24in. Service Géographique de l'Armée, March, 1890. * The Secretary for the Colonies of France, through the Paris Geographical Society.

Reduced Survey Map of India. By J. G. Bartholomew. With index. Scale 1/4,435,200. 30in. by 38in. * Thacker, Spink, & Co., Calcutta, 1891, publishers.

Relievo Map of the Holy Land. By Henry F. Brion. London, 1891.

AFRICA.

Afrika. Bearbeitet von R. Lüddecke. 6 sheets, each 13in. by 16in. Scale 1/40,000,000. Justus Perthes, Gotha, August, 1891.

Africa. Physical. Class Lesson Series, No. 102. Scale 250 miles to the inch. 21in. by 30in. T. Ruddiman Johnston & Co., Edinburgh.

Algeria and Tunis. Railway Map. Scale 1/2,000,000. 14in. by 23in. R. Miaux, Algiers, 1891. * Mr. G. Jacoby.

Bizerte. Tunis. Carte de Reconnaisance. Scale 1/200,000. 12in. by 19in. Service Géographique de l'Armée, 1887. * Mr. G. Jacoby.

French Soudan. Drawn by Captain Fortin and Governor Estrabou. Scale 1/500,000. In 20 sheets, each sheet 18in. by 24in. Etat-Major du Soudan Français. * Secretary for the Colonies of France, through the Paris Geographical Society.

Anglo-French Boundary in Senegambia. Delimited by the Commission in 1891. Scale 1/126,720, or 2 miles to the inch. In 4 sheets, each 26in. by 30in. Intelligence Division, War Office, No. 848. * The Director of Military Intelligence.

Africa. South of the Equator, showing Existing Boundary Treaties. By George Cawston. May, 1891. Scale 133 miles to the inch. 20in. by 16in. E. Stanford, London. * The British South Africa Company.

Southern Zambesia. Scale 1/1,584,000, or 25 miles to the inch. In 2 sheets, each 24in. by 26in. 19° E. to 37° E., 15° S. to 24° S. Compiled and lithograped at the Intelligence Division, War Office (No. 846), under the direction of Lieut.-Colonel J. C. Dalton, R.A., 1891. * The Director of Military Intelligence.

Madagascar. Carte du Territoire de Diego-Suarez. Scale 1/20,000. In 16 sheets, each 20in. by 32in. Executée par les Officiers d'Infanterie de Marine, en 1887-1888, sous la direction de Lieut.-Colonel Badens. * The Secretary for the Colonies of France, through the Paris Geographical Society.

AMERICA.

Map of the United States, 1890. Scale 1/2,850,000, or 45 miles to the inch. 64in. by 44in. * The Jarvis-Conklin Mortgage Trust Company.

AUSTRALASIA.

Australasia. Daily Weather Charts, 1891. 20in. by 26in. Chief Weather Bureau, Brisbane. * Mr. C. L. Wragge.

Queensland. Maps showing Rainfall, Prevailing Winds, Amount of Cloud, 1887. 20in. by 26in. Chief Weather Bureau, Brisbane. * Mr. C. L. Wragge.

The Southern Alps. Eastern Slope of Mount Cook. Scale 1/316,800, or 5 miles to the inch. The General Survey Office, Wellington, New Zealand. * The Surveyor-General, New Zealand.

ATLASES.

Atlas oft Werelt-Beschryving, in welcke 't Aerdryck, de Zee, en Hemel, Wort Vertoont en Beschreven. By Joan Blaeu. 9 volumes. Amsterdam, 1664. Presented by Subscription.

Atlas Méthodique et Elementaire de Géographique et d'Historie. By Buy de Mornas. 2 volumes. 57 and 70 engraved plates. Paris, 1761.

The English Imperial Atlas and Gazetteer of the World. By J. G. Bartholomew. T. Nelson and Sons, London, 1891. * The Publishers.

World-Wide Atlas of Modern Geography. 112 plates and index. W. and A. K. Johnston, London, 1892. * The Publishers.

A New Universal Atlas, from the last edition of d'Anville and Robert. By Thomas Kitchen, London. Laurie and Whittle, 1795. * Mr. J. B. Shaw.

L'Année Cartographique. Supplement annuel à toutes les publications de Géographie, etc. By F. Schrader. Hachette & Cie, Paris, October, 1891.

Brehm's Zoological Atlas. 55 sheet engravings. Index. Ruddiman Johnston & Co., London, 1891. * The Publishers.

The Indian Popular Atlas. 26 maps and diagrams (6 of India). 4to. W. Collins, Sons, & Co., London, 1891. * The Publishers.

Bible Atlas. By T. Ruddiman Johnston, F.R.G.S. 22 maps and diagrams. Ruddiman Johnston & Co., London, 1891. * The Publishers.

Uncrowded Standard Atlases. New series. 6 parts, for Standards II. to VII. Ruddiman Johnston & Co., Edinburgh, 1891. * The Publishers.

Catalogue of Maps in the Intelligence Division, War Office. Vol I., World and Europe. II., Asia. III., Africa. IV., America and Oceania. * The Director of Military Intelligence.

GENERAL BOOKS.

Marco Polo Venetiano. Delle Merauiglie del Mondo per lui vedute. In Treuigi, Ad instantia di Aurelio Reghettini Libraro. 1590. * Mr. C. Collman.

A Voyage Round the World in the years MDCCXL-IV. By George Anson, Esq., (now Lord Anson). Compiled by R. Walter, M.A. 42 copper plates. 9th edition. London, 1756. * Surgeon-Major J. M. Black, F.R.C.S.E.

Reisen in Asien, Australien, and Amerika. Von Dr. Wilhelm Landau. 508pp. H. Steinitz, Berlin, 1889. * The Author.

System of Universal Geography, Ancient and Modern. By the Rev. Thos. Bankes. Maps and illustrations. 990pp. C. Cooke, London. * Mr. George Hargreaves.

Sir John Franklin and the North-West Passage. By Captain A. H. Markham, R.N. (World's Great Explorers.) G. Philip and Son, London, 1891.

Ferdinand Magellan. By F. H. H. Guillemard. (World's Great Explorers.) G. Philip and Son, London, 1891.

Leaders into Unknown Lands, being chapters of recent travel. By A. Montefiore, F.R G.S., &c. Illustrations. 320pp. S. W. Partridge & Co., London. * The Author.

The History of the Caliph Vathek and European Travels. By W. Beckford. (Minerva Library.) 550pp. Illustrations. Ward, Locke, & Co., London, 1891.

The Life of Arthur, Duke of Wellington. By C. D. Younge. (Minerva Library.) Ward, Locke, & Co., London, 1891.

Salammbô of Gustave Flaubert. Englished by M. French Sheldon. 421pp. Saxon and Co., London. * Mrs. French Sheldon.

The Student's Geography. By George Gill. Maps, &c. 1,000pp. 2nd edition. George Gill and Sons, London, 1891. * The Publishers.

A New Geography on the Comparative Method. By Professor J. M. D. Meiklejohn, M.A. Maps, &c. Fourth edition. 504pp. A. M. Holden, St. Andrews, 1890.

The British Empire: Its Geography, Resources, Commerce, Landways, and Waterways. By J. M. D. Meiklejohn, M.A. Maps, &c. 336pp. A. M. Holden, St. Andrews, 1891.

The Earth in Space. A Manual of Astronomical Geography. By E. P. Jackson, A.M. 74pp. Illustrations. D. C. Heath & Co., Boston, U.S.A., 1889.

Topics in Geography. By W. F. Nichols, A.M. 174pp. D. C. Heath & Co., Boston, U.S.A., 1890.

The Teacher's Manual of Geography. By J. W. Redway. Illustrated. 174pp. D. C. Heath & Co., Boston, USA., 1890.

The Reproduction of Geographical Forms. (1) Sand and clay modelling. (2) Map-drawing and map-projection. Illustrated. 84pp. By J. W. Redway. D. C. Heath & Co., Boston, U.S.A., 1890.

A Handbook of Vegetable and Mineral Products of all Countries. By J. H. Silberbach. 30pp. Liverpool, 1887.

Handbook to Illustrations of Physical Geology. By Alexauder Johnstone, F.R.G.S. Sheet No. 1, Dynamical Geology. 32pp. W. and A. K. Johnston, Edinburgh, 1891.

How to Enliven Geographical Instruction and to Lighten it. By Dr. Konrad Ganzenmüller. 30pp. Dresden, 1887. * The Author.

Geographical Games. "Neptune," "Spottit." * Mrs. Walker.

Manual Training in Germany. By J. S. Thornton. T. Lawrie, London, 1891. * The Author.

Handbook to Fourth General Conference on Education in Manchester, in 1891. Warren & Co., London.

Educational Annual. Compiled by Edward Johnson. 348pp. G. Philip and Son, London, 1891.

Manchester School Board Class List. 1884-5, 1885-6, 1886-7, 1887-8, 1888-9, 1889-90. * Mr. H. Sowerbutts.

Prospectus, Manchester Schoool Board Evening Classes, 1891-92. Illustrated with view of each school. 126pp.

City of Manchester School Board. Report of Evening Continuation Schools. Report of Commercial Evening Schools. Report of Science and Art Schools. Report of Special Classes for 1890-91.

Syllabus, Manchester Technical School Day and Evening Classes, 1891-92. 216pp.

Prospectus of Day and Evening Classes for the Examinations by the University of London. London, 1891.

Sheffield School Board. Regulations for the Management of Schools, 19th July, 1888. * Mr. H. Sowerbutts.

A Description of the Work of the Manchester Art Museum. By T. C. Horsfall. J. E. Cornish, Manchester, 1891.

Handbook to the Manchester Art Museum. By T. C. Horsfall. A. Ireland & Co., Manchester, 1891.

Teachers' Registration Bill, and Circular of Teachers' Guild thereon. (Bill 48, 1891.)

Report of the Committee of Council on Education (England and Wales), with Appendix, 1889-90.

Annual Report of the Commissioners of Education in Ireland for the year 1890-91.

Code of Regulations, &c., by the Council on Education, 1891.

A Guide Book to Books. Edited by E. B. Sargant and Bernhard Whishaw. 344pp. H. Frowde, London, 1891.

Fondation d'un Institut International des Sciences Géographique. By L. Falquet. 16pp. Berne, 1891. * The Author.

Musée Commerciale Industriel et Ethnographique Catalogue des Collections. Antwerp, 1888. * The Museum.

IVe Congrès International des Sciences Géographiques terms à Paris en 1889. Vol. I., 796pp.; Vol. II., 494pp. Paris, 1890. * Paris Geographical Society.

Decimal Coinage, Weights, and Measures Popularly Explained. Decimal Association London, 1890. * The Association.

Time-Reckoning for the Twentieth Century. By Sanford Fleming, C.M.G., &c. Washington, 1889. * Canadian Institute, Toronto.

Les Progrès de L'Anthropologie. By Le Marquis de Naidillac. Paris, 1891. * The Author.

Sanitary State of Capetown, by J. M. Black (*Sanitary Record*).—On Typhoid and Remittent Fevers in the Cape, Natal, and Zululia, by W. T. Black (*Medical Times and Gazette*).—Ocean Waves, by W. J. Black (*Nature*).—Ocean Rainfall, by W. J. Black (*Nature and Railway Supplies' Journal*).—Spa Improvements, by W. J. Black (*Medical Times and Gazette*).—Meteorological Observations on s.s. Ceylon, 1885, by W. J. Black (*Provincial Medical Journal*).—Cyprus Fever, by J. M. Black (*Sanitary Record*).—Mr. W. G. Black's Meteorological Instruments (*Marine Engineer*). * Surgeon-Major J. M. Black, F.R.C.S.E.

Geodesy. By J. Howard Gore. (Heineman's Scientific Handbooks.) Illustrations. 218pp. London, 1891. * The Publisher.

The Influence of Atmospheric Pressure on the Free Flow of the Tidal Wave. By W. Nelson Greenwood, F.R.Met.Soc. With charts and tables. * The Author.

Diurnal Range of the Barometer in Great Britain and Ireland. By F. C. Bayard, F.R.Met.Soc., &c. 20pp. Plates. * The Author.

Comparison between the Jordan and the Campbell-Stokes Sunshine Recorders. By F. C. Bayard, LL.M., &c, 4pp. * The Author.

The Evolution of Marriage. By Ch. Letourneau. (Contemporary Science Series.) W. Scott, London, 1891.

Report of Meteorological Council, 1889-90. Appendix 18, contains additions to library.

Military Sketching Made Easy, and Military Maps Explained. By Major H. D. Hutchinson. 208pp. Illustrations. Gale and Polden, Chatham, 1891.

L'Origine Européenne des Aryas. By Professor R. P. Van den Gheyn, of Lowain. Paris Bureaux des Anuales de Philosophie Chrétienne, 1889. * The Author.

L'Origine Asiatique de la Race Noire. By Professor J. Van den Gheyn, I. J. of Lowain. Pollemis and Centerick, Bruxelles, 1891. * The Author.

The Crematorium in the General Cemetery at Zurich. By Mr. A. Geiser, City Architect of Zurich. Translated by Mr. H. Simon, C.E. Manchester, 1891. * Mr. Simon.

Ventilating and Heating by Mechanical Means. By William Key. British Association, Cardiff, 1891. 12pp. * The Author.

Diseases of Cage Birds. By W. T. Greene. 60pp. Upcott Gill, London.

Royal Gardens, Kew. Bulletin of Miscellaneous Information, 1889.

Agricultural Returns of Great Britain, with Abstract Returns for United Kingdom, British Possessions, and Foreign Countries, 1890.

Second and Third Annual Reports on Insects and Fungi Injurious to Crops. By C. Whitehead. 1888, 1889.

Reports on Insects Injurious to Hop Plants, Corn Crops, and Fruit Crops. By C. Whitehead. Nos. 1, 2, 3. 1885.

Reports on Insects Injurious to Root and other Crops. By C. Whitehead. 1887.

Report of the Progress of the Ordnance Survey to the 31st December, 1889.

Cotton to Cloth and Calico Printing. From Fleece to Flannel. From Flax to Linen. How a Lace Curtain is Made. Reprinted from *Diary and Buyers' Guide*, 1888-1891. * H. Bannerman and Sons, Limited.

Adress—Buch der Textile-Industrie. Österreich-Ungarns. 274pp. Reichenberg, 1889.

Everybody's Books. 4 vols. 222pp., 189pp., 317pp., 319pp. Saxon & Co., London, 1890. * The Publishers.

Excursions, British Association, Manchester, 1887. * The Secretary.

British Commercial Geographical Society, 1884. 24pp. Provisional Prospectus. By Commander Cameron, C.B. * Rev. S. A. Steinthal.

Societies of Commercial Geography. By Edward J. Watherston. 8pp. Edinburgh, 1881. * Rev. S. A. Steinthal.

Foreign Import Duties. 340pp. H.B.M. Government Return 376, 1890.

Reports on the Position of Peasant Proprietors Abroad.

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Report of the Board of Trade on Profit-Sharing. Blue Book C 6267. 1891.

Through the British Empire in Five Minutes. By C. E. Howard Vincent, M.P. Maps. W. and A. K. Johnstone, London, 1886.

The Regeneration of Israel. By M. L. Lilienblum. The "B' New Zion." 46pp, London. * Mr. B. I. Belisha.

Lettre de S.E. le Cardinal Lavigerie, sur l'Association des Frères Armés on Pionniers du Sahara. Paris, 1891. * Paris Anti-slavery Society.

State Provision against Sickness and Old Age. By Louis Tylor. 22pp. British Association, Cardiff, 1891.

The Fourth International Congress on Inland Navigation. Maps, &c.

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Outlines of the Geology of the British Isles (to accompany the Geological Map). By A. Geikie, F.R.S.E., F.G.S. 106pp. W. and A. K. Johnston, Edinburgh, 1876.

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Official Guides: Great Northern Railway. London and North-Western Railway. Great Western Railway. Illustrated. London, 1891.

Commercial Aspects of the Manchester Ship Canal. By Marshall Stevens. Maps. 32pp. Manchester, 1891. Ship Canal Company.

Guide to the Ship Canal. 36pp. 22 illustrations. John Heywood, Manchester.

Summer Rambles around Manchester. By Alfred Rimmer. 235pp. Illustrated. John Heywood, Manchester.

Amalgamation of Manchester and Salford. Report of Joint Executive Committee, October 15th, 1888. * Rev. S. A. Steinthal.

Old Bradford Illustrated. Written by H. Fieldhouse. 94pp. Bradford, 1889.

A Pictorial Gossiping Guide to Whalley and Mitton, Stonyhurst, Clitheroe, the Valley of the Ribble, &c. Thos. Johnson, Blackburn.

Beauties of Sherwood Forest. Guide to the Dukeries. By F. Sissons. 146pp. Maps and illustrations. Sissons and Son, Worksop, 1888.

Guide to the Dukeries. Illustrated. 36pp. Sissons and Sons, Worksop.

The ABC Guide to London. Map, with index, &c. London, 1891.

A Holiday in the Isle of Man. Prize Essay. Map. Isle of Man Steam Packet Company, 1891.

Llangollen. Plas Newydd. By General Yorke. Illustrated. 1888.—Guide to Llangollen and Corwen. Illustrated. Darlington, Llangollen.—A Guide to the Walks and Drives of Llangollen and Neighbourhood. James Clarke, Llangollen.

Twenty-four Views of Shrewsbury and Neighbourhood. 1891.

Pidgeon's Handbook for Shrewsbury. By Wm. Hughes. Map and cuts. Barray and Davies, Shrewsbury, 1884.

Visitors' Guide to Shrewsbury. Illustrated. Adnitt and Naunton, Shrewsbury, 1891.

The Illustrated Guide to Cardiff. D. Owen & Co., Cardiff, 1885.

The Barry Dock Tide Table and Year-Book, 1891. By L. Lewis. * Barry Dock Company.

Souvenir Album of Cardiff, Penarth, and Llandaff. 14 views.

Royal Cabinet Album, Cardiff. 18 views. Rock, London, 1891.

N.U.T. Easter Conference, 1891. A Brief Guide to Cardiff and Neighbourhood. Blackie and Son, London, 1891.

The Turner House. A Descriptive Catalogue of Drawings, Porcelain, &c., in the Turner House, Penarth. By Mr. F. Wedmore.

Prospectus for Session 1891-2 of the Cardiff Technical School. Orme & Co., Cardiff, 1891.

B.A., 1891. Handbook for Cardiff and District. Edited by Ivor James. Maps. D. Owen & Co., Cardiff, 1891.

Album of Views of Newport, Monmouthshire. Rock, London, 1891.

The Excelsior Guide to Swansea and Mumbles. Map. By T. E. Bath. Cambrian Office, Swansea.

A Complete Plan of Ilfracombe, &c., and Map of North Devon. Chronicle Office, Ilfracombe, 1891.

Guide to the River Wye from Ross to Chepstow. 40pp. Illustrations. R. Waugh, Monmouth, 1891.

Fifty-Eighth Report from the Commissioners of Public Works in Ireland, 1889-90.

Portugal. By H. Morse Stephens. (Story of the Nations.) 450pp. Illustrations. T. F. Unwin, London, 1891.

Handbook for Normandy and Brittany. With three maps. 110pp. Thomas Cook and Sons, London, 1889.

Guide to Trouville and Adjacent Watering-Places. With 8 illustrations, 1 map, and 4 plans. Libraire Hachette et Cie., Paris, 1890. * Mr. H. Cruse.

Guide to Havre. Par Gustave Simons. Illustrated. 59pp. E. Dentu, Paris, 1888. * Mr. H. Cruse.

Notice Historique et Descriptive sur la Tapisserie dite de la Reine Mathilde (Exposée à la Biblioth'que de Bayeux). Par L'Abbé J. Laffetay. 79pp. O. Payan, Bayeux, 1885. * Mr. H. Cruse.

Souvenir de Bruxelles, 1890. 12 views.

La Suisse et les parties limitrophes de l'Italie, de la Savoie, et du Tyrol. Maps, &c. K. Bædeker, Leipzig, 1889.

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Guide to Switzerland. Illustrated. 212pp. Ward, Lock, & Co., London.

Guide through Berne and Neighbourhood. By A. Wæber. Map and cuts. Schmid, Franke, & Co., Berne, 1891.

Album of Views of Berne. In souvenir of the 7th Centenary, 1891.

Berne. Fifteen Small Photographic Views. 1891.

Gründungsfeier der Stadt Berne, 1191-1891. Official Panorama of the Procession. Berne, 1891.

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136. London. Church Missionary Society for Africa and the East. Proceedings for 92nd year, 1890-91.

137. London. Church Missionary Intelligencer. Vol. XLII., Nos. 513-524. January to December, 1891.

138. London. London Missionary Society.

139. London. Illustrated Catholic Missions. Vol. V., Nos. 57-60, January to April, 1891 ; Vol. VI., Nos. 61-68, May to December, 1891.

140. London. St. Joseph's Foreign Missionary Advocate. Quarterly. Ninth Year. Vol. II., 9 and 10. 1891.

141. London. The Society for the Propagation of the Gospel in Foreign Parts. Report for 1890.

142. London. The Mission Field. Vol. XXXVI., Nos. 421-432. January to December, 1891.

143. London. Central Africa. A Monthly Record of the Work of the Universities' Mission. Nos. 97-108. January to December, 1891.

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146. London. Wesleyan Missionary Society Notices. Seventh Series. Vol. III. January to December, 1891.

147. London. At Home and Abroad. A Wesleyan Missionary Magazine for Young Helpers in the Work. Nos. 145-154. January to December, 1891.

148. London. Report of the Methodist New Connexion Missionary Society, 1890.

149. Mangalore. The Fifty-first Report of the Basel German Evangelical Mission in South-Western India, for the year 1890.

150. Paris. Missions d'Afrique (d'Alger.) Sous la Protection de Notre-Dame d'Afrique. Nos. 85-90. January-February to November-December, 1891.

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155. Belfast. Report and Proceedings of the Belfast Natural History and Philosophical Society, for the session 1889-90.

156. Cardiff. Report and Transactions of the Cardiff Naturalists' Society. Vol. XXII., Parts 1 and 2, 1890.

157. Carlisle. Transactions of Cumberland and Westmorland Association for the Advancement of Literature and Science. No. XV., 1889-90.

158. Croydon. Proceedings and Transactions of the Croydon Microscopical and Natural History Club, 1890.

159. Edinburgh. The Scottish Geographical Magazine. Vol. VII., Nos. 1 to 12, and Index, 1891.

160. Glasgow. Transactions of the Geological Society of Glasgow. Vol. VIII., Part 1, 1883-4, 1884-5 ; Part 2, 1886-7, 1887-8 ; Vol. IX., Part 1, 1888-89, 1889-90.

161. Glasgow. Proceedings of the Philosophical Society of Glasgow. Vol. XXII., 1890-91.

162. Glasson Dock, Lancaster. Kludonometric Tide Tables for the United Kingdom for 1891, showing the Time of High Water and Height of Tide at the Different Seaports, with a description of the Lights, Buoys, and Beacons in the various Seas, Channels, and Adjacent Ports; Port Directory for the whole of the Kingdom, giving the Tonnage, Pilotage, Towage, and Ballast Rates; Copious Extracts from Orders in Council relating to Navigation, &c., by W. N. Greenwood, F.R.Met.S., &c.

162a. Nautical General and Coasting Kludonometric Tide Tables, Port Directory, Harbour and Dock Guide for 1892, showing the Time of High Water and Height of Tide at all the Chief Ports in the British Isles and the West of Europe, and a mass of other valuable matter for the Mercantile Marine, by W. N. Greenwood, F.R.Met.S.

163. Halifax. Proceedings of the Yorkshire Geological and Polytechnic Society. New Series, Vol. VI., Part 1, 1871-2; Part 2, 1875; Part 3, 1876; Part 4, 1877. Vol. VII., Part 1, 1878; Part 2, 1879; Part 3, 1880; Part 4, 1881. Vol. VIII., Part 1, 1882; Part 2, 1883; Part 3, 1884. Vol. IX., Part 1, 1885; Part 2, 1887; Part 3, 1888. Vol. X., History of the Society, 1837 to 1887, 1889. Vol. XI., Part 1, 1889; Part 2, 1890; Part 3, 1891.

164. Leeds. Transactions of the Leeds Geological Association, Part 5, 1889; Part 6, 1890-91.

165. Leeds. Transactions of the Yorkshire Naturalists' Union. Part 1, 1887; 2-3, 1878; 4, 1879; 5, 1880; 6, 1881; 7, 1882; 8, 1883; 9, 1884; 10-11, 1885; 12, 1886; 13, 1887; 14, 1888; 15, 1889; 16, 1890.

166. Leeds. Report of the Yorkshire Union of Technical Institutes for 1890.

167. Leicester. Transactions of the Leicester Literary and Philosophical Society. Vol. II., Part 9, October, 1891.

169. Liverpool. Proceedings of the Liverpool Geological Society. 30th Session, 1888-89; 31st Session, 1889-90; 32nd Session, 1890-91.

170. London. The Anti-Slavery Reporter. 1891. Vol. II., Nos. 1-6.

171. London. British Association for the Advancement of Science. Report of the Leeds Meeting, 1890.

172. London. Journal of the East India Association. 1891. Vol. XXIII., 1-3-4.

173. London. The Journal of Education. A Monthly Record and Review. 1891. Nos. 258-269, January to December.

174. London. Circulars from the Emigrants' Information Office, 31, Broadway, London. 1st January, 1st April, 1st July, 1st October, 1891.

175. London. Journal of the Royal Asiatic Society. Parts 1, 2, 3, 4, 1891.

176. London. Proceedings of the Royal Geographical Society and Monthly Record of Geography. Vol. XIII., Nos. 1-12, 1891.

177. London. Review of Reviews. November-December, 1891.

178. London. Congrès Géologique Internationale Compte Rendu de la 4me Session, London, 1888.

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179. Manchester. Chamber of Commerce. Seventieth Annual Report. 1891.

180. Manchester. Chamber of Commerce Monthly Record. Nos. 1-12, 1891.

181. Manchester. Co-operative Wholesale Societies, Limited, England and Scotland. Annual for 1891.

182. Manchester. Transactions of the Manchester Geological Society. Vol. XXI., Parts 11 and 12, 1891.

183. Manchester. Report of the Manchester Museum, Owens College, with introductory Notices, &c. 1889-90. 20pp. The Council of Owens College.

184. Manchester. Annual Report of the Manchester and Salford Sanitary Association for 1890. 120pp.

185. Manchester. The Ship Canal News. Vol. V., 4-12 ; VI., 1-3. 1891.
186. Manchester. The Textile Mercury. Marsden and Co., Manchester. Vol. IV., 89-114 ; V., 115-140, 1891.
187. Manchester. The Textile Recorder and Textile Industries. Published by John Heywood. Vol. VIII., Nos. 93-96 ; IX., 97-104, 1891.
188. Manchester. Report of the Union of Lancashire and Cheshire Institutes, for year ending September 30th, 1891.
188A. Manchester. Journal of the Manchester Geographical Society. Vols. I. to VII. (For contents see index to each vol.)
189. Newcastle-on-Tyne. Journal of the Tyneside Geographical Society, Newcastle-on-Tyne. Vol. I., Nos. 4 and 5.
190. Penzance. Transactions of the Royal Geological Society of Cornwall. Vol. XI., Part 5. The Seventy-seventh Annual Report of the Council, 1890, and papers read to the Society.
191. Salford. Forty-second Annual Report of the Museum, Libraries, and Parks Committee, 1889-90.
192. York. Annual Report of the Yorkshire Philosophical Society, 1890.

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⁂ The black figures refer to the number of the Journal in the preceding list, and the lighter figures the pages where the information will be found.

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British New Guinea, Report 1890-91, with maps and illustrations. (115. 1.)
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The Island of Malo and its Inhabitants, with Illustrations. (133. 201 and 234.)

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Native Cloth, Fiji Islands. By E. Lovett. (158. 274.)

SAMOA ISLANDS.

The Samoa Archipelago, with map. (78. 193.)
The Samoa Islands. By M. A. Baguet. (1. 287 and 380.)
Samoa. By Professor Credner. (34. 7.)

SANDWICH ISLANDS.

The Sandwich Islands, with map. (139. 2.)
The Hawai or Sandwich Islands. By Captain F. Régnier. (39. 42.)
Journey to the Sandwich Islands. By J. A. Lemoine. (61. 105.)
Description of Mauna Loa, Hawai. (67. 561.)

POLAR REGIONS.

The Influence of Drift Ice on the Ground Formation in the Polar Regions, with maps of North and South Polar Regions. By St. Georg Hartmann. (46a. 173.)
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Rain and Snowfall in the Arctic Regions. By Dr. M. Friedrich. (46a. 93.)
Study on the Possibility of attaining the North Pole. By A. Hamberg. (94. 75.)
Christmas in the Arctics, illustrated. (139. 177.)
Dr. John Rae's Arctic Explorations. (66. 194.)
Proposed Antarctic Exploration. By Commander C. Pasco, R.N., F.R.G.S. (118. 76.)
Antarctic Exploration. By E. Du Faur, Esq., F.R.G.S (121. 21.)
Antarctic Exploration. By E. Delmar Morgan. (176. 632.)
Nordenskjold's South Polar Expedition. (67. 547 and 807.)

ATLANTIC OCEAN.

The First Transatlantic Steamers. By J. V. (8. 245.)
The Sargasso Sea. (176. 613.)
The Sargasso Sea. (67. 631.)
Gulf Stream Explorations, 1888 and 1889, with diagrams. By Lieut. J. E. Pillsbury. (104. 467.)
The Gulf Stream and the Climate of Western Europe. By C. C. Adams. (67. 35.)
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Physical and Historical Sketch of the Mediterranean. By Lieutenant-Colonel Sir. L. Playfair. (58. 297.)
The Mediterranean, Physical and Historical. By Lieut.-Colonel Sir R. Lambert Playfair, K.C.M.G., F.R.G.S. (171. 874.)
Deep Sea Exploration in the Mediterranean. (117. 6.)
Geology of the Maltese Islands, Observations on. By J. H. Cooke. (117. 22, 37, 48, 70, and 88.)
The Natural History of Malta. By Rev. Prof. Henslow, M.A., F.L.S., &c. (117. 61.)
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Sketch of the Geology of Pantelleria ; importance of its thermal springs to the Maltese. By C. Jervis. (117. 93.)
" Pleistocene Bed " at Gozo, Notes on discovery of. (117. 7.)
Diseases of the Mediterranean Orange. By J. H. Cooke. (117. 79.)
Cyprus. By Lieut.-General Sir R. Biddulph, G.C.M.G., C.B. (117. 29, 51, and 83.)
A Retrospective Periplus of the Mediterranean Sea. (117. 13.)

Political Geography.—In the lower grades of grammar schools history is not taught, and rarely are lessons given on subjects relating to the government of the countries which are studied in the geography lesson. Much time is given to physical geography, and the lengths of rivers, heights of mountains, and areas of continents are learned and frequently recited. While the general facts of physical geography should be brought out in this geography lesson, there should be given also not a little attention to political geography, and with this there should be introduced something of the study of civics. Every schoolboy and girl should know what is meant by the term government, and should know somewhat of its powers and limitations. In particular there should be talks on the government of the city and state and nation in which the pupils reside. This is a part of geography, and it should receive careful consideration by the teacher. It is a simple affair to arrange a set of topics which the teacher thinks should require attention, and these can be used in nearly any lesson heard in geography. The children should know the ward or district they dwell in, the names of the representatives of their ward in the city council ; the city government and its chief rulers; the state government and its executive and legislative power ; the national government, its president. and some of its legislative branch. Children are always interested in the study of government. They hear it talked about at home, they know all about affairs at election time, and they have the inherited prejudices of party affiliation. Better men, and better women, better citizens will grow out of these easy informal talks about the government of this land.—*Goldthwaite's Geographical Magazine*, December, 1891.

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December 31st, 1891.

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CLee, H. H., J.P.
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Lightwood, James T.
Linton, R. J.
Little, Rev. H. W.
Lloyd, J. W.
ALongworth, Charles H.
Lord, George, J.P.

Lord, John
Lord, W. C.
HLorne, The Right Hon. the Marquis of, K.T.
Luke, Robert
Lyall, W. W.

McAdam, John
McClymont, Wm.
McDougall, Councillor A.
Macfarlane, James
McLaine, James R.
McLaren, Rev. A., D.D.
McLardy, Samuel
McLoughlin, James
McNaught, William
AMacpherson, Rev. James
Malkin, Councillor W. H.
Makin, E., jun.
Makin, James
Makinson, Alderman C., J.P.
Manchester, The Right Rev. the Lord Bishop of (Dr. Moorhouse)
AMann, W. H.
CMaples, The Venerable Archdeacon
Mappes, F.
AMare, Frederick le
Marlor, William, jun.
LMarsden, James, J.P.
AMarsden, James
Marsden, Richard
AMassey, Mrs. A. E.
AMassey, Samuel
Mather, William, M.P., J.P.
AMatthews, P., jun.
Maxwell, Francis W.
Mayall, Derbyshire
AMaybury, J. H.
AMaybury, W. H.
Mayer, Isaac
Mazzebach, C.
Meggat, John
Mehl, F.
Mellalieu, H. H., J.P.
Melland, W. E.
LMellor, E. W.
AMellor, Wm. H.
AMethven, David
Michaelis, R. N.
Middleton, T. C., A.C.A.
Middleton, W. A.
Millington, Miss M.
AMiller, J. W.
AMiller, Mrs. J. W.
Millers, John
CMillson, Alvan, Lagos
Milne, Councillor J. D.
Milner, Edward
Milner, George, J.P.
Molesworth, James Murray, C.E.
AMöller, Victor J.
HMoloney, Sir Alfred H. E., G.C.M.G., Belize
Moore, J. Murray, M.D., F.R.G.S.
Morgan, Mrs. E.
Morris, James Alfred
AMorris, John, jun.
Morton, Miss
Mosley, William
Moxon, Thomas Bouchier
Mullett, Charles
Munro, Professor J. E. C., LL.D., LL.M.
Murray, Councillor Adam

Needham, J. C.
Neil, Alexander
Neill, Robert, jun.
Nesbitt, Thomas
Newall, J. F.
ANewbigging, Thos., C.E.
Newton, George
Nicolson, Allan
Nodal, J. H.
Norris, John
Nuttall, Henry
Nuttall, Joseph

O'Connor, Benjamin
Ogden, Samuel, J.P., Oldham
Ogden, Samuel, J.P.
AOgden, Mrs. M. C.
AOgden, Miss F. E.
AOgden, J. T.
*Oldham Corporation, Libraries Committee
AOldham, H. Yule, M.A., F.R.G.S.
Oldham, William
Ollivant, Alfred
CO'Neill, H. E., H.B.M. Consul, Rouen.
AOppenheim, Siegmund
AOrton, Rev. J. W.
AOrton, S. C.

Pankhurst, R. M., LL.D.
Park, Abraham, F.R.G.S.
Parkinson, J. B.
Parlane, James, J.P., Consul for Paraguay
Pascoe, J. R.
Paulsen, P. A.
Peace, James B.
Pearn, Sinclair
Pearson, James Fildes
Pearson, Thomas
Pendlebury, Herbert
APerkins, Joseph
HPeters, Dr. Carl, German East Africa
APeters, Ralph
Philip, George
Phillips, R. C.
Pickard, Matthew
Pierce, W. H.
Pingstone, Councillor H. C.
APitcairn, W. D., F.R.G.S.
CPlant, Senor Don Francisco S.
Plews, J. R.
APollitt, John
LPorter, Rev. W. C., M.A.

Powell, Charles
ᴀProvis, C. W.
ᴀProvis, Mrs. M. A.

Quine, Rev. John

ᴀRadcliffe, F.
ᴀRains, Samuel
Ramage, Rev. P.
Ramsbottom, Robert
ᴀReade, S. J.
ᴀRedman, Rev. A., M.A.
ᴀRedmayne, R.
ᴀReed, J. Howard
Reiss, Fritz
Reyner, J. B., J.P.
ᴀReynolds, J. H.
Rhodes, Councillor George
Rhodes, George W.
Richardson, A.
ᴀRichardson, J.
ᴀRichardson, J. E.
Riddick, Robert
ᴀRigg, Fred
Robertshaw, James
ᴀRobertshaw, W. T.
ᴀRobertson, W. J.
Robinow, Max
Robinson, Alderman B., J.P.
Robinson, Oswald
Robinson, William
Robson, W. G.
Roby, H. J., M.P., M.A., LL.D.
ᴀRoebuck, Mrs. Mary
Roeder, Charles
ᴄRogers, Lieut.-Col. E., F.R.G.S.
Roper, Councillor Henry
Roskill, C.
Ross, Edward
Ross, John R.
Rothwell, Edward
Rothwell, Councillor W. T.
Roux, Leon G. Le, Vice-Consul for France
Rowbottom, W. H.
Ruscoe, John
ᴀRushworth, Arthur
Rushworth, Councillor James
ᴀRushworth, W. A.
Russel, A. C.
Rymer, Thomas Harrison

Salford, The Right Rev. the Lord Bishop of (Dr. Vaughan)
Salomonson, Edward
ᴀSamson, Edward
Samson, Councillor Henry, J.P.
ᴀSaner, James
Sankey, John
Sankey, J. Gibbons, B.A.
Schofield, C. J.
Scholes, Charles
Schwabe, Edmund Salis
Schwann, C. E., M.P.
Scotson, James
Scott, Arthur R.
Scott, C. P., J.P.
Scott, Rev. Laurence
ᴄScott, J. F., jun.
ᴀSeed, G. H.
ᴀSefton, Thomas T.
Sever, Charles
Shaw, James Begg
Shaw, Reginald W.
Sherratt, Councillor William
ᴀSherratt, Ralph
Shippey, Edward
Siegler, H.
ᴀSilberbach, J. H.
Simon, Henry, C.E.
Simpson, J. Harvey
Sington, George
ᴀSlater, Joseph
ᴀSlatter, Henry R., J.P.
ʟSmallman, Councillor F.
Smallpage, Nathan
ᴀSmith, Edwin
Smith, F.
Smith, John R.
Smith, Robert
Smith, Walter
ʜSmithson, G. E. T.
Snaddon, J.
Somerset, Henry
Southam, George A., J.P.
ᴀSouthward, Henry
Southworth, Harold A.
Sowerbutts, Eli, F.R.G.S.
ᴀSowerbutts, Harry, Assoc.R.C.S.
ᴀSowerbutts, T. W.
ᴀSpencer, P.
Stanfield, Thomas
ʜStanley, Henry Morton, F.R.G.S.
ʜSteinthal, H. M.
Steinthal, Rev. S. A., F.R.G.S.
Steinthal, E. F.
Stevenson, Rev. Morley, M.A.
ᴀStewart, Robert
Stirrup, Mark, F.G.S.
Stock, John Owen
Storey, Henry E.
Stott, C. H.
ᴀStuttard, Rev. E. E.
ᴀSumner, Hewitt
ᴀSutherland, J., M.D.
Sutton, Rev. F. O., M.A., F.R.G.S.
Swanwick, J. Alfred
Swindells, Henry
Sykes, Richard, J.P.
Symonds, The Rev. Canon

ᴀTait, Mortimer L.
Tallis, Ed. Fox
ᴀTatton, Lees W.
Taylor, Alfred
Taylor, Frederick
Taylor, T. Knox
Taylor, William

aTelford, Robert
Terry, Henry
aThacker, A. L.
Thewlis, J. H.
Thomas, George
aThompson, Isaac W.
aThompson, Miss Jane
Thompson, John, Macclesfield
Thompson, John, Sale
Thompson, Alderman Joseph, J.P.
Thompstone, Mark W.
Thomson, John
cThomson, Joseph, F.R.G.S., &c.
cThomson, J.P., F.R.S.G.S., Brisbane
cThornton, Joseph Smith, B.A.
Timperlake, E.
Tinkler, J. J.
Tootill, Ellis
Trafford, Sir Humphrey F. de, Bart.
Trevor, Councillor Wm.
Trueman, J.
Tscharner, Paul von
aTurnbull, Thomas
aTysoe, A. E.

aUre, William

Vaughan, Rev. D. W., M.A.
aVeevers, Harrison, A.M.Inst.C.E.

Wade, Richard
hWainwright, Joel, J.P.
Wainwright, John
Wainwright, Thomas Foster
aWakefield, Rev. Thos., F.R.G.S.
Walkden, John
Walker, Mrs. Alice
Walker, J. A.
aWalker, James N.
Wallwork, R.
Warbrick, J. J., C.E.
aWarburton, John
Ward, Professor A. W., M.A., Litt.D., Principal of Owens College
aWard, Mrs. A. W.
aWard Elijah
aWard James
aWard, William
aWardale, Wm.
aWardle, Wm.
aWarren, Geo. H.
Waterhouse, I. C.
aWatkinson, J. W.
aWatson, Major C. M., R.E.
Watson, Joseph
Watson, Robert
Watt, R. H.
Watts, Miss
aWatts, Miss F. E.
aWatts, Miss M. E.
Watts, James
aWatts, W. T.
aWebster, George Vernon
aWebster, Herbert
aWebster, John
aWhitaker, John Henry
Whyman, Philip
Wild, Charles
Wild, Joseph
aWild, Wm.
Wilde, Miss E. D.
Wilkinson, James F.
Wilkinson, Wm.
Wilkinson, Robert J.
Wilkinson, T. R., Vice-Consul for Ottoman Empire
Williams, Daniel
Williams, J. F., F.R.G.S.
Williamson, Wm. Henry
Wilson, Daniel
lWilson, James
Wilson, John
Wilson, Lawrence
Winmarleigh, The Right Hon. Lord
Winstanley, Thomas
hWinton, Major General Sir Francis de, R.A., K.C.M.G., F.R.G.S.
Withington, W. H.
Wood, Mrs. A. H.
aWood, George
lWood, George W. Rayner, J.P.
Wood, Henry
aWood, Rev. J.
Wood, R. B.
aWood, Thos.
Wood, Councillor W.
aWoodford, Edward
Woodhead, S. Benson
Woodhouse, S. T.
Woods, R.
aWoods, Rev. W. J., B.A.
Woolfenden, Joseph, jun.
Woolley, George Stephen
Woolley, Herman
Worth, Joseph
Wrathmell, T.
Wrennall, Monsignor Canon
Wright, E.
Wrigley, Edwin Grundy
cWylde, A. B., Suakin

Yaldesgian, S.
Yates, J. M.
hYeats, John, LL.D.
Young, Arthur

Zimmern, Fritz

PROCEEDINGS OF THE SOCIETY.

OCTOBER 1st TO DECEMBER 31st, 1891.

The 176th Meeting of the Society, held in the Memorial Hall, Wednesday, October 7th, 1891, at 7 p.m., Mr. Councillor SHERRATT in the chair. Letters from the Rev. S. A. Steinthal and Dr. Ward, regretting their absence, were read.

MRS. BOSDIN T. LEECH distributed the prizes obtained in the examination in the Geography of Lancashire and Cheshire. The prize holders were as follows:—

First Prize of 20s. and Certificate: Madeleine Maud Cook, William Henry White, Fred. Grundy, William Purdy, and Arthur Kirk.

Second Prize of 10s. and Certificate: Albert Newton, William Pimlott, Sarah Ellen Moylan, James Oldham Cheetham, James Henry Edmiston, Mary Anne McNamara, James Edwin Taylor, Vernon Ingram Norbury Williams, Annie Fox, and James William Grainger.

George Philip Prize (Book) and Certificate: Robert Willan, Tom Kirk, and Mary Teresa White.

Certificate: George Kirk, Cyril Barlow, Catherine Moore, Lucy McDonough, Catherine Dooley, James Broadbent Taylor, and Florence Kennedy.

MRS. LEECH made a few remarks to each child as they presented themselves.

The prize of £5 offered by Mr. Theodore Gregory, F.C.A., for the best essay on "The Commercial Products of Central Africa" (see page 105), had been awarded to Mr. J. Howard Reed, and a small memorial volume was presented to him by Mrs. Leech.

Mr. REED, in a few appropriate words, thanked the donor of the prize, and Mrs. Leech for her graciousness in the presentation.

Mr. Alderman BOSDIN T. LEECH moved a very hearty vote of thanks to Mr. Theodore Gregory for his prize of £5, to Mr. George Philip for three prizes, to the Victorians for taking the examination; to the examiners, Professor Boyd Dawkins, Professor Core, and the Rev. L. C. Casartelli; and to all who had assisted in bringing to a satisfactory conclusion the first prize scheme of the society. The Chevalier Froehlich seconded the motion, which was carried unanimously.

Mr. REED responded, and moved a vote of thanks to Mrs. Leech for distributing the prizes, which was seconded and carried.

Mr. THOMAS WEIR then addressed the members on "Astronomy in Relation to Geography." The address was illustrated by diagrams specially prepared, photographs of the Moon and of Galileo's instruments, and by a half-size model of a quadrant of Tycho Brahe. Foucault's Pendulum experiment was successfully repeated.

The Rev. T. CORBISHLEY and Mr. WOOD moved and seconded a vote of thanks to Mr. Weir, which Mr. GRINDLEY supported, and the motion was carried with applause.

Mr. WEIR responded, and a vote of thanks to the Chairman being carried and responded to, the meeting closed.

The 177th Meeting of the Society, held in the Library, Wednesday, October 14th, 1891, at 7·30 p.m., Mr. B. O'CONNOR in the Chair.

The Minutes of Meetings from April 14 to October 7 (159th to 176th), were read and approved, and a large number of presentations and additions to the library were announced.

Papers by Mr. R. N. Cust, LL.D., on "The Occupation of Africa by the Missionaries of Europe and North America;" by the Chevalier Guillaume, Southampton, on "The River Beni, Peru" (see page 342); and by Mr. J. W. Blower, on "The Sources of the Mississippi" (see page 301), were read. The papers were illustrated with maps and were followed by considerable discussion. The meeting closed with thanks to the writers of the papers and to the Chairman.

The 178th Meeting of the Society, held in the Chamber of Commerce room, Tuesday, October 20th, 1891, at 7·30 p.m. The Rev. S. A. STEINTHAL, and afterwards Alderman BOSDIN LEECH, in the chair.

Mr. C. L. TUPPER, Secretary to the Punjab Government, addressed the members on "The Recent Progress of Indian Agriculture." (See p. 201.)

A large number of questions having been asked, to which Mr. TUPPER replied, Mr. J. B. DOWDALL moved a hearty vote of thanks to Mr. Tupper, which was seconded by Mr. BELISHA, and passed unanimously. Thanks to the Chairman closed the meeting.

The 179th Meeting of the Society, held in the Library, Friday, October 23rd, 1891, at 7·30 p.m. The Rev. S. A. STEINTHAL in the Chair.

A letter from Mr. Tupper having been read, the Minutes of the Meetings held October 14th (177), and October 20th (178), were read and approved, and the election of the following members was announced:—

LIFE: Mr. George Jackson.

ORDINARY: Miss Higham, Messrs. Edward Briggs and James Morris.

ASSOCIATE: Messrs. Hewitt Sumner, and Daniel Wilson.

The CHAIRMAN read his Report on the International Congress of Geography at Berne, supplementing his report with a description of Berne and of the Festival in celebration of the Seventh Centenary of the Foundation of the City. (See p. 270.)

The SECRETARY made some remarks on Berne and pointed out a resemblance of that city to Shrewsbury, exhibiting maps, photographs, wood carvings, and other curiosities.

Mr. MARK STIRRUP, F.G.S., gave a further description of Berne, and mentioned that the Geological Congress, like the Geographical, were endeavouring to obtain a a map of the world on an uniform scale. He moved a vote of thanks to Mr. Steinthal for his report and address.

Mr. R. C. PHILLIPS seconded the motion, and questioned the value for any practical purposes of such a map as the one proposed at Berne.

Mr. J. H. REED supported the motion and replied to Mr. Philips.

Other gentlemen took part in the discussion.

The SECRETARY read his report of the Yorkshire Union of Institutes, at Pudsey.

The Delegate and the Chairman having been thanked, the meeting closed at a late hour.

The 180th Meeting of the Society, held at the Bidston Observatory, Saturday, October 24th, 1891, at 4 p.m., MR. B. O'CONNOR in the chair.

A party of members visited the Observatory and were received by the DIRECTOR (Mr. John Hartnup) who explained the purposes of the observatory, and the use of the instruments. The afternoon being fine, the view as far as the Great Orme's Head and along the Coasts was perfect.

The thanks of the members, on the motion of Mr. J. B. Shaw, seconded by Dr. J. M. Moore, were given to the Director. Thanks were also given to Mr. O'Connor for his leadership.

The 181st Meeting of the Society, held in the Library, Friday, October 30th, 1891, at 7-30 p.m. Mr. GUSTAV JACOBY in the Chair.

The minutes of meetings, Oct. 23rd (179) and 24th (180) were read and approved.

A paper by Mr. E. DELMAR MORGAN, F.R.G.S., on the question of Antarctic Research (see p. 311), and a communication by the REV. L. C. CASARTELLI, M.A., Ph.D., on the New Natural History Museum at Brussels, were read. Thanks to the Chairman closed the meeting.

The 182nd Meeting of the Society, held in the Avondale Restaurant, Liverpool, Saturday, October 31st, 1891. Mr. GEORGE HARKER in the Chair.

A hundred members had gone in the morning to Northwich, and proceeded in the "St. Mawes' Castle" down the Weaver, and along the Manchester Ship Canal, to Eastham. Several engineers being on board, the members were enabled to obtain much information on the subsidences of the land by brine pumping, the Anderton lift, and the Canal works. The excursion was very much enjoyed, the day being fine, and lunch was provided on board.

The ferry was found at Eastham, and in a dense fog the members reached Liverpool. After tea, a meeting was held, when votes of thanks were passed to the Syndicate for the use of the vessel, to Mrs. Platt for her attention, to the Victorian Organiser of the Excursion, and to the Chairman.

Before proceeding to Manchester, some of the members inspected the Walker Art Gallery, and spent some time at the Organ Recital at St. George's Hall.

The 183rd Meeting of the Society, held in the Memorial Hall, Wednesday, November 4th, 1891, at 7-30 p.m., Mr. THOMAS DENTITH in the chair.

Mr. D. A. O'GORMAN addressed the members on "Recent Trade Progress and Competition in India." (See page 230.) The address was illustrated by a large map.

Several questions having been asked and replied to, the CHAIRMAN moved and Mr. BELISHA seconded a vote of thanks to Mr. O'Gorman for his interesting and valuable paper. The motion was passed by acclamation, and thanks to the Chairman closed the meeting.

The 184th Meeting of the Society, held in the Mayor's Parlour, Town Hall, by permission of His Worship the Mayor, Friday, November 13th, 1891, at 3 o'clock p.m. His Worship the MAYOR of MANCHESTER in the chair.

MRS. MAY FRENCH-SHELDON addressed the members on her "Descent to Lake Chala and visit to Kilimanjaro, and the condition of the women of the district." The address was illustrated by a large map, prepared by the Victorians, and enlarged photographs of views taken by Mrs. Sheldon.

Questions were asked, and the Rev. T. WAKEFIELD, F.R.G.S., and Mr. GEORGE HARKER addressed the meeting. The Rev. S. A STEINTHAL moved a vote of thanks to Mrs. Sheldon, seconded by the Rev. T. WAKEFIELD. Thanks were also given to His Worship the Mayor for the loan of his parlour, and for his kindness in taking the chair, on the motion of Mr. GEORGE HARKER, seconded by the Chevalier FROEHLICH.

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The 185th Meeting of the Society, held in the Memorial Hall, Friday, November 13th, 1891, at 7-30 p.m., Rev. S. A. STEINTHAL in the chair.

The members received Mrs. M. French-Sheldon, the Rev. T. Wakefield, Mr. C. Everson, and Mr. Haughton.

Mrs. SHELDON described a number of views, shown by the lantern, taken on her recent journey. The Rev. T. WAKEFIELD spoke on East African matters. Mr. EVERSON described two new maps of Lancashire and Yorkshire, and Mr. HAUGHTON described a new map of Yorkshire, prepared by Mr. F. D. King, and also a map of Huddersfield and district for the teaching of local geography. Music was rendered by Miss Barlow and Miss Edith Webster. Refreshments were served during the evening.

Thanks were heartily voted to Mrs. Sheldon, the Rev. T. Wakefield, Miss Barlow, Miss Webster, the Victorians, and all who had added to the interest of the meeting. Mrs. SHELDON responded, and thanked the Victorians for the map presented to her by them.

The 186th Meeting of the Society, held in the Memorial Hall, Wednesday, November 18th, 1891, at 7-30 p.m., Mr. R. C. PHILLIPS in the chair.

Miss H. E. COLENSO addressed the members on "Scenes in Zululand," illustrating the address by a large number of lantern views.

Questions having been asked and replied to, very hearty thanks were given to Miss Colenso for her address, to the lantern demonstrator (a Victorian), and to the Chairman. Miss COLENSO responded.

The 187th Meeting of the Society, held in the Library, Friday, November 27th, 1891, at 7-30 p.m. Mr B. O'CONNOR in the chair.

The minutes of meetings held October 30th (181) to November 18th (186) were read and approved. A large number of presentations to the library were placed before the members. The election of the following members was announced :—

LIFE : Mr. James Marsden, J.P.

ORDINARY : Miss E. D. Wilde, Messrs. Thomas Archer, W. H. Cowburn, Lionel M. Johnson, Isaac Kay, W. W. Lyall, John McAdam (in lieu of associate), Matthew Pickard, Arthur R. Scott, and John R. Smith.

ASSOCIATES : Messrs. W. T. Robertshaw and Herbert Webster.

The DELEGATE to the British Association read the following report, which was accepted. Papers by Mr. Gwyn Morris, of Cardiff, on "Commercial Geography" (see p. 328) ; "Railway Communications of India," by Mr. W. C. Furnivall (see p. 216) ; by Mr. J. P. Thomson, F.R.S.G.S., of Brisbane, on "The Ascent of Mount Yule" (see p. 294), and the following note on the "Geographical Work of Mr. Thomson," were read by the SECRETARY.

THE GEOGRAPHICAL WORK OF MR. J. P. THOMSON, F.R.S.G.S., THE SECRETARY AND TREASURER OF THE BRISBANE SOCIETY.

THE geographical work of this new member of the Society and the variety of his publications has been so great that the members of the Society will be pleased to have some account thereof.

During the years 1873-4-5 Mr. Thomson visited New York, travelled through the United States of America, thence to the central part of the province of New Brunswick, where he ascended the Miramichi River. Returning to Scotland for a brief period, he next voyaged to the south-west coast of America, where he visited Valparaiso, and travelled through the countries of Peru and Chili. Again returning to Scotland, he afterwards proceeded to New Zealand, arriving in that colony in the beginning of 1876. During that year he travelled through the whole of New Zealand, and in the beginning of 1877 voyaged to New South Wales, where two years were spent in travelling through that colony and through other parts of the Australian continent. In 1879 the writer proceeded to the Crown colony of Fiji, in the Western Pacific, where he was occupied for five years in conducting surveys and explorations of the islands, on behalf of the Imperial Government, of that part of the Queen's dominions. During that period he surveyed and explored for the first time, assisted by a staff of Polynesians, the following regions, viz. : The whole of the north-western, northern, and south-eastern coasts of Viti Levu ; part of the interior of that island, the whole of the islands of Kadavu, Ovalaw, Taviuni, Koro, Rabi, and others of less size. He also ascended to their sources the rivers of Rewa, Waidalici, Dreketi, Wailevu, Labasa, Navua, and others of less magnitude, throughout the group. These surveys and explorations, which were officially mapped out by him, added very largely to our knowledge of the geographic conditions of these Western Pacific Islands. He also conducted extensive observations for latitude and longitude throughout the group, and for magnetic declination, eclipses, &c.

While engaged upon these official duties he conducted the observation of the transit of Venus, in 1882—a most important and distinguished scientific commission with which he was entrusted. (See the *Fiji Times*, Wednesday, November, 1882, and December 15, 1882.)

After leaving Fiji he visited and travelled through New Caledonia. He also visited New Guinea, and several other islands in the Western Pacific, after which he took up his residence in Queensland, where he is now located in the city of Brisbane, having arrived there in the first month of 1885.

Mr. Thomson is the author of the following publications :—

1. The Late Phenomena after Sunset.—*Suva Times*, April 23, 1884.
2. Total Eclipse of the Moon, April 10, 1884.—*Ibid.*
3. Sketches on the Rewa River.—*Ibid.*, Oct. 29, 1884.
4. Sketches on the Navua River.—*Ibid.*, Nov. 5, 1884.
5. The Late Hurricane, Fiji.—*Brisbane Daily Telegraph*, April 17, 1886.
6. Comets : Their Orbits, and the method of computing their elements, &c.—*Brisbane Courier*, Feb. 8, 1887.
7. Objects of the Geographical Society.—*Proceedings of the Geographical Society of Australasia, Queensland Branch, vol. I.*
8. Macuata, the North-west Coast of Vanua Levu, Fiji, &c. (with a map).—*Ibid.*
9. The Rewa River, Fiji : its Tributaries and District (with a map).—*Ibid.*, vol. II., part I.
10. Report of the meeting of Inter-Colonial Delegates held in Sydney, Nov., 1886.—*Ibid.*, part II.
11. Report upon the Preliminary Examination of a Hill of Subsidence in the Redbank Plains District, &c., Queensland.—*Ibid.*
12. The Importance of the Teaching of Geography in the School.—*Ibid.*, vol. III., part I.
13. The Comet.—*Ibid.*, part II.

14. Occultation of the Planet Venus by the Moon, March 9, 1888.—*Ibid.*

15. His Honour Sir W. MacGregor's Ascent of Mount Victoria, and Exploration of the Owen Stanley Range, British New Guinea (with a map).—*Ibid.*, vol. V., part I.

16. On the Application of Astronomy to Meteorology.—*Ibid.*, part II.

17. Notes on the Brisbane River Floods.—*Ibid.*

18. Sir W. MacGregor's Upper Fly River Exploration, British New Guinea.—*Ibid.*

19. The North-east Coast of British New Guinea, and some of the Adjacent Islands (with a map).—*Ibid.*, vol VI., part I.

20. On British New Guinea.—*The Scottish Geographical Magazine*, vol. III. page 648.

21. On British New Guinea.—*Ibid.*, vol. IV., p. 334.

22. On New Guinea and Adjacent Islands.—*Ibid.*, p. 495.

23. On New Guinea.—*Ibid.*, p. 613.

24. The Barcaldine Artesian Well, Queenslaud.—*Ibid.*, p. 333.

25. On New Guinea.—*Ibid.*, vol V., p. 271.

26. On New Guinea.—*Ibid.*, p. 557.

27. The Island of Kadavu (with a map).—*Ibid.*, p. 638.

28. The Blackall Artesian Well, Queensland.—*The Journal of the Manchester Geographical Society*, vol. IV., p. 168.

29. Nouvelle Guinée.—*Bulletin de la Société de Geographie de Marseille*, tome XII., p. 68.

30. Nouvelle Guinée.—*Ibid.*, p. 70.

31. Nouvelle Guinée.—*Ibid.*, p. 201.

32. Nouvelle Guinée·—*Ibid.*, p. 303.

33. Nouvelle Guinée.—*Ibid.*, tome XIII., p. 80.

34. Sir W. MacGregor, Nouvelle Guinée.—*Ibid.*, p. 410.

35. Sir W. MacGregor, Nouvelle Guinée.—*Ibid.*, tome XIV., p. 203.

36. M. MacGregor, Nouvelle Guinée.—*Ibid.*, p. 417.

37. Exploration de la Papouasie Anglaise.—*Bulletin de la Société de Geographie Commerciale de Paris*, tome X., p. 204.

38. Un Nouveau Puits Artesian en Australaise.—*Ibid.*, p. 449.

39. En Nouvelle Guinée.—*Ibid.*, p. 457.

40. Un Exploration de la Nouvelle Guinée Anglaise.—*Ibid.*, p. 656.

41. Nouvelle Guinée, Anglaise et Allemande.—*Ibid.*, tome XI., p. 143.

42. On Promenades, Parks, Areas, and Open Spaces in Cities.—*Written for and published by a Member of the Legislative Assembly of Queensland.*

43. Universal Time and the Prime Meridian.—*Read before the Royal Society of Queensland, on Friday, March 13, 1891.*

Besides these there are several others of earlier date. A complete account of his travels, explorations, observations, and wanderings would be interesting. In addition to the not inconsiderable services rendered to geographical science, the past six years of his life have been devoted to the *Royal Geographical Society of Australasia (Queensland Branch).*

Arriving in Brisbane at the commencement of 1885, he took active steps to found the Royal Geographical Society of Australasia, in that city, having satisfied himself that the interests of geographical science would not fail to be thereby largely promoted, with advantage to the people and to the colony. From its inception up to the present time he has incessantly laboured as the honorary secretary and treasurer of the society, and editor of its literature.

REPORT OF DELEGATE TO THE MEETING OF THE BRITISH ASSOCIATION, AT CARDIFF, AUGUST, 1891.

The meeting at Cardiff was distinguished for its wetness. All the interesting out-of-door functions were spoiled. The Members of the Association were received with great kindness by the Worshipful the Mayor of Cardiff (The Marquis of Bute, K.G.), and by the various committees of reception. The papers read were of fairly good quality, although there were not any of overbearing brilliance. The two meetings of Delegates were well attended, and the matters discussed were interesting. Especial notice may be taken of the resolutions passed by the Committee in reference to the Ordnance Survey, and we may hope that some practical result may be seen from them. The address of Mr. E. G. Ravenstein in the Geographical Section is reprinted (with his permission). The most valuable papers in section E were the following :—

On the Comparative Value of African Lands. By Mr. A. Silva White.

Suggestions for the Revision and Improvement of the Large Scale Maps of the Ordnance Survey. Mr. H. T. Crook, C.E.

Antarctic Exploration. Mr. E. Delmar Morgan.

The Geography of South-West Africa. Dr. Hy. Schlichter.

Visit to Kilimanjaro and Lake Chala. Mrs. May French Sheldon.

The Physical and Industrial Geography of Florida. Mr. A. Montifiore, F.R.G.S.

The Volta River. Mr. G. Dobson.

The Bakhtiari Country and the Karun River. Mrs. Bishop.

In the other sections some very valuable papers were read, as the two papers on India, by Mr. Tupper, and Mr. Furnivall.

Generally the meeting was a success, the inclemency of the weather causing a larger attendance in the sections than would probably have obtained otherwise.

In the appendix a few of the Committees having special reference to Geographical matters are given.

The Delegate will be glad to receive any communication on the subjects therein referred to.

The following are some of the questions discussed by the Delegates :—

Section A : Temperature Variations in Lakes, Rivers and Estuaries. Meteorological Photography.

B : Inquiry into the Condition of the Atmosphere of Manufacturing Towns.

C : Geological Photography. Sea Coast Erosion. Earth Tremors.

D : Disappearance of Native Plants. Destruction of Wild Birds' Eggs. Popularising of Natural History Studies. Botanical Demonstrations for Teachers.

E : Teaching of Geography in Primary Schools.* Ordinance Maps.

G : Flameless Explosives.

N : Aid in Anthropological Explorations. Description of Museum Specimens. Interchange of Publications. Registration of Prehistoric Remains.

The discussion on the interchange of publications has borne fruit, and the Society is to be congratulated on the valuable accessions to the Library resulting therefrom. For our Society the Cardiff meeting was a most profitable one in many ways, and your delegate trusts the next meeting at Edinburgh may be as fruitful.

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* The Secretary will be glad to have any information or suggestions on this subject.

APPENDIX.

The following Committees, having some relation to Geographical questions, were appointed by the General Committee at the Cardiff Meeting, in August, 1891.

I.—RECEIVING GRANTS OF MONEY.

Subject for Investigation or Purpose.		Grants.
		£
Co-operating with the Scottish Meteorological Society in making Meteorological Observations on Ben Nevis.	*Secretary*—Professor Crum Brown.	50
The Application of Photography to the Elucidation of Meteorological Phenomena.	*Secretary*—Mr. Clayden.	15
The Volcanic and Seismological Phenomena of Japan.	*Secretary*—Professor J. Milne.	10
The Action of Light upon Dyed Colours.	*Secretary*—Professor J. J. Hummel.	10
Recording the Position, Height above the Sea, Lithological Characters, Size, and Origin of the Erratic Blocks of England, Wales, and Ireland, reporting other matters of interest connected with the same, and taking measures for their preservation. [This grant includes £10 granted last year but not drawn.]	*Secretary*—Dr. H. W. Crosskey.	15
The Collection, Preservation, and Systematic Registration of Photographs of Geological interest.	*Secretary*—Mr. O. W. Jeffs.	20
To consider the best Methods for the Registration of all Type Specimens of Fossils in the British Isles, and to report on the same.	*Secretary*—Mr. A. Smith Woodward.	5
The Circulation of the Underground Waters in the Permeable Formations of England, and the Quality and Quantity of the Waters supplied to various Towns and Districts from these Formations.	*Secretary*—Mr. C. E. De Rance.	10
To complete the Investigation of the Cave at Elbolton, near Skipton, in order to ascertain whether the remains of Palæolithic Man occur in the Lower Cave Earth.	*Secretary*—Rev. E. Jones.	25
To carry on Excavations at Oldbury Hill, near Ightham, in order to ascertain the existence or otherwise of Rock Shelters at that spot.	*Secretary*—Mr. B. Harrison.	25

Subject for Investigation or Purpose.		Grants.
		£
Completion of a Report on the Cretaceous Polyzoa.	*Secretary*—Mr. G. R. Vine.	10
To report on the present state of our Knowledge of the Zoology of the Sandwich Islands, and to take steps to investigate ascertained deficiencies in the Fauna, with power to co-operate with the Committee appointed for the purpose by the Royal Society, and to avail themselves of such assistance in their investigations as may be offered by the Hawaiian Government. [£100 granted last year but not drawn.]	*Secretary*—Dr. David Sharp.	100
To report on the present state of our Knowledge of the Zoology and Botany of the West India Islands, and to take steps to investigate ascertained deficiencies in the Fauna and Flora. [£100 granted last year but not drawn.]	*Secretary*—Mr. G. Murray.	100
Climatological and Hydrographical Conditions of Tropical Africa.	*Secretary*—Mr. G. J. Symons.	75
Exploration of Prehistoric Remains in Mashonaland.	*Secretary*—Mr. J. Theodore Bent.	50
The Physical Characters, Languages, and Industrial and Social Condition of the North-Western Tribes of the Dominion of Canada.	*Secretary*—Mr. Bloxam.	100
The Habits, Customs, Physical Characteristics, and Religions of the Natives of India.	*Secretary*—Mr. Bloxam.	10
Corresponding Societies' Committee.	*Secretary*—Professor R. Meldola.	25

II.—NOT RECEIVING GRANTS OF MONEY.

Subject for Investigation or Purpose.	
The Rate of Increase of Underground Temperature downwards in various Localities of dry Land and under Water.	*Secretary*—Professor Everett.
The Rate of Erosion of the Sea-coasts of England and Wales, and the Influence of the Artificial Abstraction of Shingle or other material in that action.	*Secretaries*—Messrs. C. E. De Rance and W. Topley.

Subject for Investigation or Purpose.	
To undertake the Investigation of the Sources of the River Aire, and also to test the value of Uranin and other Dyes in investigating the Courses of Underground Streams.	*Secretary*—Professor Silvanus P. Thompson.
The Volcanic Phenomena of Vesuvius and its neighbourhood.	*Secretary*—Dr. H. J. Johnston-Lavis.
Considering the advisability and possibility of establishing in other parts of the country Observations upon the Prevalence of Earth Tremors similar to those now being made in Durham in connection with coal-mine explosions.	*Secretary*—Mr. C. Davison.
Disappearance of Native Plants from their Local Habitats.	*Secretary*—Professor W. Hillhouse.
To make a Digest of the Observations on the Migration of Birds at Lighthouses and Light-vessels.	*Secretary*—Mr. John Cordeaux.
For taking steps to establish a Botanical Station at Peradeniya, Ceylon.	*Secretary*—Professor F. O. Bower.
To consider proposals for the Legislative Protection of Wild Birds' Eggs.	*Secretary*—Dr. C. T. Vachell.
The Teaching of Science in Elementary Schools.	*Secretary*—Professor H. E. Armstrong.
Intermarriage between widely dissimilar Peoples inhabiting the same Country.	*Secretary*—Mr. H. Ling Roth.
The Prehistoric and Ancient Remains of Glamorganshire.	*Secretary*—Mr. E. Seward.

Resolutions referred to the Council for consideration, and action if desirable.

A Resolution relating to the Times of Meeting of the General Committee and the Committee of Recommendations.

Resolutions referring to the Ordnance Survey, viz. :

(1) That the publication of the one-inch and six-inch Ordnance Survey Maps is, in the interests of Science, urgently required at the earliest possible date, no less than in the interests of Industry, Manufacture, and Technical Education.

(2) That steps be taken and provision made for keeping the Ordnance Maps up to date.

(3) That the Maps should be made more accessible to the public, and should be sold at a lower price, as is the case in nearly all other official publications, such as Admiralty Charts, Blue Books, &c.

A lengthy discussion took place on the several papers, and very hearty thanks were given to the writers of the papers, the donors of books and maps, and to the Chairman.

The 188th Meeting of the Society, held in the Library, Wednesday, December 9th, 1891, at 7-30 p.m., Mr. J. Howard Reed in the chair.

The minutes of meeting November 27th (187) were read and approved. A number of presentations and the election of the following members were announced :

Ordinary : Messrs. James Bate, George Elwen, and J. J. Cardwell (in lieu of associate.

Associate : Mr. Fred Rigg.

Papers were read on " The Ancient Languages of the Natives of Teneriffe," by the Most Noble the Marquis of Bute, K.T. ; " Correct Pronunciation of Foreign Geographical Names," by Dr. Ganzenmüller (see page 332) ; the following short notes on "The Solution of the Difficulties as to a Standard Railway Time," and on " Free Travel."

SOLUTION OF THE DIFFICULTIES AS TO A STANDARD RAILWAY TIME.

TRUE AND FALSE TIME.

The plan of dividing the earth into zones of an hour wide, each with a time of its own, now (as I understand) inaugurated in Germany, absurd as it is, shows, nevertheless, that a faint ray of light has penetrated into the public mind where utter darkness formerly reigned ; it is at any rate a slight improvement on the clumsy and haphazard practice of each important State keeping the time of its own capital, regardless of its neighbours ; and is less preposterous than the proposal, also gravely made, to keep one time all over the world ; but it by no means goes to the root of the matter. The whole of the present imbroglio is a sort of nightmare struggle against the laws of nature and common sense, and the only way out of it is to awake ; to ercognise that those laws are beyond the reach of Scientific Congresses or Acts of Parliament, and that we must adapt ourselves to them, not try to evade or defy them.

Say what you will, the world does take 24 hours to revolve on its axis, and it is physically impossible that it should be noon at the same time in two different places, unless in the same meridian—you may call it so, but it will not be—and if the subject were a new one, a sudden proposal that the inhabitants of one place should call it noon at sunrise, those of another at sunset, those of a third at midnight, on the plea of convenience, would have been too ridiculous for serious notice ; yet such is the indolent readiness with which people accept what they find settled for them without applying their minds to it, that a system which involves that absurdity has taken root, and consequently the Nemesis, which sooner or later will ever avenge departures from rational principles, is making itself felt.

Happily, there is a simple and easy remedy at hand—keep true time everywhere, and all difficulty vanishes. It is a mere question of time tables.

I only ask for a return to what was the universal practice of mankind until the days of Bradshaw, and of which the violation has a merely accidental origin in the thoughtlessness and want of foresight of the clerks who framed the short time tables of the incipient railway system.

I say the return to this practice is simple and easy. For instance, take a place one degree—that is, 4 minutes—west of London ; say Reading, though it is not quite accurate. A train is to go there in one hour. It starts at 12, London time, and consequently arrives at Reading at 4 minutes to 1, Reading time. This is what it really does, whether you say so or not. And why should you not say so? Where is the difficulty or inconvenience of saying so? I fail to see any. The time table will give 12 o'clock for leaving London, and 12·56 for reaching Reading; the clocks of Reading will show true time instead of false time; and everything will be plain and rational.

A few hours of clerks' work is all that is wanted to adjust all the time tables in the world on this footing, once for all; and the tables will be as simple and intelligible as at present. Fractions of minutes are adjusted and humoured now, and so they will be then; neither more nor less.

"But the traveller arriving at Reading will find his watch wrong." Exactly so! and it will be wrong; let him set it. A dreadful hardship truly! It is, properly speaking, a slight benefit to him, as reminding him of a fact; but even if it is an inconvenience, are all the people in the town to keep their clocks and watches wrong all the year round only to oblige a few strangers? When you talk of convenience, why should it be assumed as a matter of course that the convenience of one man who is travelling is to be preferred to the convenience of the ninty-nine people who stay at home? Travellers, after all, are but a small portion of the whole population.

Again, when you talk of convenience, what can be more inconvenient than to have two concurrent reckonings of time? The day on which a man is born and comes of age, the hours for going forth and coming home, for sleeping and waking, the beginning and end of a day for nearly every purpose in fact, except railway travelling, depend on true time, and must continue to do so. There are indeed some people so unable to grasp the true nature of things as to suppose that an Act of Parliament can somehow or another prevent such inconveniences—such as the sapient legislator who introduced the "Statutes Definition of Time Act, 1880," whereby it is enacted, that for certain purposes the world shall be deemed to go round in an entirely new (though unintelligible) fashion. With such it is useless to reason.

The advantage of getting correct time by electric wire from Greenwich to set all clocks by, which is great, will not be interfered with by the return to reason for which I plead. When the Reading man learns that it is one o'clock at Greenwich, he will set his clock at four minutes to one, which surely is just as easy as setting it at one. Everybody, at least everybody concerned with the setting of clocks, knows, or can very easily learn, how far west or east he is of Greenwich.

What I say now, I have been saying to all who would listen to me, and to many who would not, for upwards of forty years—beginning in the *Builder* newspaper of the 15th January, 1848. I have been generally told in reply that I do not understand the spirit of progress; the few who could see that I was right in principle, have talked of insuperable practical difficulties. But that is only the expression of the mistrust aroused by everything startling. I, on the contrary, affirm with confidence, that anyone who fairly gives his mind to my proposal and thinks it out, will find no difficulties that are not easily superable—far more superable than the difficulties, already great, and becoming more unmanageable every year, of the existing system, or, as it should rather be called, the existing chaos. When you have once got a thoroughly sound guiding principle, you have only to stick to it inflexibly, and all details will, must, come right of themselves. It is only where the guiding principle is unsound that details will not fit.

Though railway managers may go on with clumsy makeshifts, breaking down one after the other, for a little longer, my plan alone can be final. They must come to it at last; and the longer they delay the change the more trouble they will have in effecting it. I strongly urge, therefore, its immediate adoption. If only one nation, or even one large railway company, would take the first step, all the others would follow; they could not help it. "Fling but a stone, the giant dies!"

FREE TRAVEL: A STARTLING PROPOSAL MADE IN SECTION F OF THE BRITISH ASSOCIATION. BY S. M. BURROUGHS.

That it would be desirable to have railways throughout the country, as free for use by the public as lifts or elevators in hotels are free for the use of the guests, there is no doubt. The only difficulty which arises in making them so is the construction and management of railways, which are a very costly enterprise.

The arguments in favour of free travel are numerous, and apparently unanswerable. It would relieve congestion in towns, it would greatly assist the commerce and industry of the country, would create a great demand for labour, and so advance wages and the social well-being of the people, and at the same time tend to a great improvement in general healthiness and morality.

If the cost of travel is not collected from passengers, it must be obtained by taxation. In the vicinity of Melbourne the children are carried to and from the free schools without charge, which, of course, makes it necessary that the amounts otherwise collected from them are collected by taxation in other ways. One aim in taxation should be to avoid taxing any class of individuals for the benefit of another class; in other words, making some rich and others poor by law.

There is a free ferry at Woolwich which carries any who wish to travel between that place and North Woolwich without any charge whatever. It has been observed that until the ferry was started the land at North Woolwich was comparatively valueless; that the ferry created a rental value on the north side of the river which did not previously exist; and that when the ferry was made as free as a free bridge, the land values at North Woolwich increased still further in rental value, even more than enough to pay for the cost of maintaining the free ferry. It therefore appears that the occupiers of land in North Woolwich pay a higher ground rent on account of the ferry being free, or in other words, that they pay in rent what they save in fares; and while they are saved some trouble in buying tickets, &c., the financial benefit of the free ferry goes into the pockets of the ground landlords in North Woolwich. This instance points the way to secure free travel without burdensome taxation by simply taking the increased land values imparted by making travel free to pay the cost of the same. This would not be unjust or oppressive to anyone. It would not tax anyone's industry, but simply appropriate for public uses one of the effects of the public enterprise.

Until the several upper floors of a new building are connected with the ground floors by stairways, the upper floors are comparatively valueless; but when the stairways are put in, the upper floors begin to have a value. If these floors are made still more accessible by free lifts or elevators, the value is still further increased. No company fitting up a large building for rental would think of letting another company put in lifts and charge a toll on their tenants. They would know that such a course would depreciate the rents of the upper floors. On the other hand, they make the use of the lifts free to the tenants, and more than recoup themselves for the cost by the increased rental value imparted to the upper floors. The situation with reference to free travel on railways and tramways is the same, only that passengers would not be carried up and down, but to and fro laterally instead of vertically.

Some years since, in Sydney, it became necessary for the municipality of Sydney to purchase certain lands for public purposes. When the holder was approached for a price, he charged a great deal more than the then present value, "because," said he, "in a few years the value of the land will be considerably increased by the construction of railways and wharves in the vicinity of the land." The Government decided that this prospective value could not justly belong to the landowner, and that it would be the result, not of his industry, but of the public progress. They therefore took the land, paying the then present value for it. If this principle could be applied to the free travel question, there would be no difficulty in securing it without direct loss to anyone. If certain landowners should fail to receive a prospective value, being the result of public and other improvements in their vicinity or the result of making their lands more accessible by means of free travel, they cannot claim that they have suffered loss, but can only say that the public have decided not to make them a present of such unearned increment, but rather to appropriate it to pay the expenses of making the land more accessible. It would not be difficult to imagine the great benefits that would result from applying this fair principle of taxation, because it would result in the payment of all costs of roads, sewers, lights, police, parks, by a tax upon the lands enhanced in value by these public expenditures. The question would simply be whether the unearned increment should be given to landholders, or whether it should be taken by the public, who create it, to pay the expense of creating it.

If this method of free travel should be adopted, the enormous expense of constructing and maintaining railways would be greatly lessened (1), for the reason that the Government, in constructing railways, would only have to pay for the value of the improvements upon land which they appropriate for the purpose, the unearned increment being previously taken in taxation. (2) There would be another economy in the amount of taxes which are levied upon the plant and rolling stock of railways, which would be exempt from taxation. (3) A good economy would be effected in the management of railways, as all the expenses of printing, selling, and collecting tickets would be avoided. If the carriage of goods were also made free, the expense would easily be met by a taxation of the increased land values imparted by these means. The saving of time on the part of the public which is now spent in purchasing tickets and in booking merchandise would also be very great.

The Secretary was requested to forward the following telegram to Lady Louisa Egerton, Holker Hall :—

"The Members of the Manchester Geographical Society desire to express their respectful sympathy with their President in his illness, and trust it may take a favourable turn."

The following reply was received during the meeting :—

"Lady Louisa Egerton returns grateful thanks, and can give a very comfortable report."

The Secretary was requested to write to Lord Winmarleigh and express the sympathy of the members with him in his sickness.

Letters from Miss H. E. Colenso, on Zululand, and Mrs. Brayne, on the work of Captain Lugard, were read. The foundation of a Geographical Society at Liverpool was announced, and the Secretary was requested to congratulate the promoters on their successful beginning. Votes of thanks to the writers of the papers, and to the Chairman closed the meeting.

The 189th Meeting of the Society, was held in the Chamber of Commerce Room, Wednesday, December 19th, 1891, at 7-30 p.m. **Mr. Samuel Ogden** in the Chair.

Mr. Wilfred M. Steinthal addressed the members on Japan, being "Notes of a Visit to the Land of the Rising Sun." (See p 277.) Mr. Steinthal exhibited Ivory Carvings, Cloisonné work, Cloths, etc. Specimens of Pottery, Wood Carving, etc., were also lent by Mr. Alderman Mark.

The address was listened to with much interest, and very hearty thanks were tendered to Mr. Steinthal, Mr. Mark, and the Chairman.

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